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TRANSACTIONS

OF THE

PATHOLOGICAL SOCIETY OF LONDON.

VOLUME THE TWENTY-FIFTH.

COMPRISING THE REPORT OF THE PROCEEDINGS FOR THE SESSION 1873-74.

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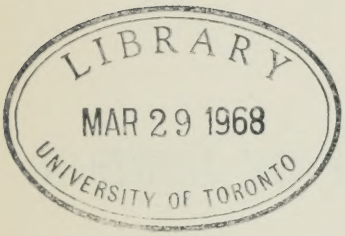

The present publication, being the Twenty-fifth Volume of Transactions, constitutes the Twenty-eighth published Annual Report of the Pathological Society's Proceedings.

The Council think it right to repeat that the exhibitors are alone responsible for the descriptions given of the Specimens exhibited by them, the only change made in the Reports furnished by the authors being such verbal alterations as were absolutely necessary.

53, Berners Street, Oxford Street;
October, 1874.

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Presidents of the Society.

ELECTED	
1846	CHARLES J. B. WILLIAMS, M.D., F.R.S.
1848	CHARLES ASTON KEY.
1850	PETER MERE LATHAM, M.D.
1852	CÆSAR H. HAWKINS, F.R.S.
1853	BENJAMIN GUY BABINGTON, M.D., F.R.S.
1855	JAMES MONCRIEFF ARNOTT, F.R.S.
1857	Sir THOMAS WATSON, Bart., M.D., F.R.S.
1859	Sir WILLIAM FERGUSSON, Bart., F.R.S.
1861	JAMES COPLAND, M.D., F.R.S.
1863	PRESCOTT G. HEWETT, F.R.S.
1865	THOMAS BEVILL PEACOCK, M.D.
1867	JOHN SIMON, D.C.L., F.R.S.
1869	RICHARD QUAIN, M.D., F.R.S.
1871	JOHN HILTON, F.R.S.
1873	Sir WILLIAM JENNER, Bart., M.D., K.C.B., D.C.L., F.R.S.

OFFICERS AND COUNCIL

OF THE

Pathological Society of London,

ELECTED AT

THE GENERAL MEETING, JANUARY 6TH, 1874.

President.

SIR WILLIAM JENNER, BART., M.D., K.C.B., D.C.L., F.R.S.

Vice-Presidents.

LIONEL S. BEALE, M.B., F.R.S.
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JOHN BURDON SANDERSON, M.D., F.R.S.
JOHN HILTON, F.R.S.
CARSTEN HOLTHOUSE.
JOHN WHITAKER HULKE, F.R.S.
JOHN WOOD, F.R.S.

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ARTHUR LEARED, M.D.
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JOSEPH FRANK PAYNE, B.A., M.B.
ARTHUR JULIUS POLLOCK, M.D.
RICHD. DOUGLAS POWELL, M.D.
PHILIP HENRY PYE-SMITH, M.D.
WILLIAM MORRANT BAKER.
WILLIAM FAIRLIE CLARKE, M.A.
M. BERKELEY HILL.
HENRY JOHN HUGHES LAWRENCE.
FRANCIS MASON.
HENRY COOPER ROSE, M.D.
HENRY SMITH.
WM. WARWICK WAGSTAFFE.
JOHN WAY, M.D.

Honorary Secretaries.

WILLIAM CAYLEY, M.D. | HENRY ARNOTT.

Trustees.

THOS. BEVILL PEACOCK, M.D. | RICHARD QUAIN, M.D., F.R.S.
GEORGE POLLOCK.

*** *Members are requested to indicate to the Secretaries corrections when necessary.*

LIST OF MEMBERS OF THE SOCIETY.

Honorary Members.

ANDRAL, G., M.D., late Professor in the Faculty of Medicine, Paris.

ARNOTT, JAMES MONCRIEFF, F.R.S., Chapel House, Lady Bank, Fifeshire.

BERNARD, CLAUDE, M.D., Professor of Physiology in the Faculty of Medicine, Paris.

BILLROTH, THEODOR, M.D., Professor of Surgery in the University of Vienna.

BRUECKE, ERNST, M.D., Professor of Physiology in the University of Vienna.

CRUVEILHIER, J. C., M.D., late Professor in the Faculty of Medicine, Paris.

HELMHOLTZ, H., M.D., Professor of Physiology in the University of Heidelberg.

HENLE, J., M.D., Professor of Anatomy and Physiology in the University of Göttingen.

LUDWIG, C., M.D., Professor of Physiology in the University of Leipzig.

ROKITANSKY, CARL, Baron, M.D., Professor of Pathological Anatomy in the University of Vienna.

STOKES, WILLIAM, M.D., D.C.L., LL.D., F.R.S, M.R.I.A., Regius Professor of Physic in the University of Dublin, Physician in Ordinary to the Queen in Ireland.

VIRCHOW, RUDOLF, M.D., Professor of Pathological Anatomy in the University of Berlin.

VOGEL, JULIUS, M.D., Professor of Pathological Anatomy in the University of Halle.

EXPLANATION OF ABBREVIATIONS.

O.M.—Original Member.
Pres.—President.
T.—Treasurer.
V.P.—Vice-President.
S.—Secretary.
C.—Member of Council.

Those marked thus (†) have paid Composition Fee for Annual Subscriptions.
Those marked thus (‡) have paid Composition Fee for Transactions.

GENERAL LIST OF MEMBERS.

Elected

1858 ACLAND, HENRY WENTWORTH, M.D., F.R.S., Regius Professor of Medicine, University of Oxford, Physician to the Radcliffe Infirmary, Oxford.

‡1866 ADAMS, ARTHUR BAYLEY.

1869 ADAMS, JAMES EDWARD, Assistant Surgeon to the London Hospital, 10, Finsbury Circus, E.C.

O.M. ADAMS, WILLIAM, Consulting Surgeon to the National Orthopædic Hospital, 5, Henrietta-street, Cavendish-square, W. (C. 1851-4. V.-P. 1867-9.)

Elected

1859 Adams, William, 37, Harrington-square, N.W.

1848 Aikin, Charles A., 7, Clifton-place, Sussex-square, Hyde-park, W. (C. 1864-6.)

1872 Aikin, Charles Edmund, 7, Clifton-place, Sussex-square, Hyde-park, W.

1871 Aie, A. Cummings, 88, Kennington-park-road, S.E.

1869 Allbutt, Thomas Clifford, M.D., Physician to the Leeds General Infirmary, 38, Park-square, Leeds.

1868 Anderson, J. Ford, M.D., 28, Buckland-crescent, Belsize-park, N.W.

1871 Anderson, William, Professor of Medical Science at the University of Yeddo, Japan.

1859 Andrew, Edwyn, M.D., Hardwick House, St. John's-hill, Shrewsbury.

1863 Andrew, James, M.D., Physician to St. Bartholomew's Hospital, 22, Harley-street, W. (C. 1868-70.)

1866 Arnott, Henry (Hon. Secretary), Assistant Surgeon to St. Thomas's Hospital, 6, Nottingham-place, Marylebone-road, W. (C. 1872. S. 1873-4.)

1851 Ashton, T. J., Consulting Surgeon to the St. Marylebone Infirmary, 20, Park-square East, Regent's-park, N.W. (C. 1871-2.)

1863 Bagshawe, Frederick, M.A., M.D., 16, Warrior-square, Hastings.

1864 Baker, William Morrant (C.), Assistant Surgeon to, and Lecturer on Physiology and Warden of the College at, St. Bartholomew's Hospital, 26, Wimpole-street, Cavendish-square, W. (C. 1873-4.)

‡1856 Balding, Daniel Barley, Royston, Herts.

1851 Barclay, A. Whyte, M.D., Physician to St. George's Hospital, 23a, Bruton-street, Berkeley-square, W. (C. 1858-61.)

1874 Barlow, Thomas, M.B., B.S., Children's Hospital, Great Ormond-street.

1871 Barnes, Robert, M.D., Obstetric Physician to St. Thomas's Hospital, 31, Grosvenor-street, W.

1862 Barratt, Joseph Gillman, M.D., Accoucheur to the St. George's and St. James's Dispensary, 8, Cleveland-gardens, Bayswater, W.

1853 Barwell, Richard, Surgeon to the Charing Cross Hospital, 32, George-street, Hanover-square, W. (C. 1862-4.)

1857 Basham, William R., M.D., Senior Physician to the Westminster Hospital, 17, Chester-street, Belgrave-square, S.W.

1861 Bastian, H. Charlton, M.A., M.D., F.R.S., Professor of Pathological Anatomy in University College, and Physician to University College Hospital, 20, Queen Anne-street, W. (C. 1869-71.)

1870 Bäumler, Christian G. H., M.D., Professor of Materia Medica in the University of Erlangen.

1871 Baxter, Evan Buchanan, M.D., Professor of Materia Medica, King's College, Strand, and Assistant Physician to King's College Hospital, 27, Bessborough-gardens, S.W.

1874 Beach, Fletcher, Bethlehem Royal Hospital, Lambeth-road, S.E.

Elected

1852 Beale, Lionel S., M.B., F.R.S., (V.-P.), Physician to King's College Hospital, 61, Grosvenor-street, W. (C. 1858-9. V.-P. 1874.)

1856 Bealey, Adam, M.D., M.A., Oak-lea, Harrogate.

1870 Beck, Marcus, M.S., Assistant Surgeon to University College Hospital, 30, Wimpole-street, Cavendish-square, W.

1853 Beck, Thomas Snow, M.D., F.R.S., 7, Portland-place, W.

1865 Beeby, Walter, M.D., Bromley, Kent.

1865 Beigel, Hermann, M.D., 2, Lichtensteinstrasse, Vienna.

1865 Bellamy, Edward, Senior Assistant Surgeon to the Charing Cross Hospital, 59, Margaret-street, Cavendish-square, W.

1847 Bennet, James Henry, M.D., Weybridge, Surrey.

O.M. Bennett, James Risdon, M.D. (formerly V.-P.), Consulting Physician to St. Thomas's Hospital, and to the City of London Hospital for Diseases of the Chest, 15, Finsbury-square, E.C. (C. 1846-8. V.-P. 1856-9.)

‡1856 Bickersteth, Edward R., Surgeon to the Liverpool Royal Infirmary, 2, Rodney-street, Liverpool.

1850 Birkett, Edmund Lloyd, M.D., Consulting Physician to the City of London Hospital for Diseases of the Chest, 48, Russell-square, W.C. (C. 1856-7.)

O.M. Birkett, John, Surgeon to Guy's Hospital, 59, Green-street, Grosvenor-square, W. (C. 1851. V.-P. 1860-2.)

1865 Bisshopp, James, Cheshunt, Herts.

1853 Black, Cornelius, M.D., Physician to the Chesterfield Dispensary, St. Mary's-gate, Chesterfield.

1850 Blagden, Robert, Stroud, Gloucestershire.

1863 Blanchet, Jean B., M.D., M.S., Montreal, Quebec, Canada.

1872 Bloxam, John Astley, Assistant Surgeon to Charing Cross Hospital, 8, George-street, Hanover-square, W.

1869 Bourne, Walter, M.D.

1861 Bower, Richard Norris, 14, Doughty-street, Mecklenburg-square, W.C.

1851 Bowman, William, F.R.S., Surgeon to the Royal Ophthalmic Hospital, 5, Clifford-street, Bond-street, W. (C. 1855-6.)

‡1867 Bridgewater, Thomas, M.B. Lond., Harrow-on-the-hill, Middlesex.

1873 Briggs, Jacob Myers, M.D., Coeymans, New York, U.S.

1868 Bright, G. C., M.B., 29, Lüttichan Strasse, Dresden.

1857 Briscoe, John, 12, Broad-street, Oxford.

†1851 Bristowe, John S., M.D., Physician to, and Lecturer on Pathology at, St. Thomas's Hospital, 11, Old Burlington-street, W. (C. 1854-8. S. 1861-4. C. 1865-7. V.-P. 1868-70.)

1860 Broadbent, William Henry, M.D. Lond., Physician to St. Mary's Hospital, and Physician to the London Fever Hospital, 34, Seymour-street, Portman-square, W. (C. 1871-3.)

1852 Brodhurst, Bernard E., Orthopædic Surgeon to St. George's Hospital, and Surgeon to the Royal Orthopædic Hospital, 20, Grosvenor-street, W. (C. 1862-4.)

Elected

1863 Brodie, George Bernard, M.D., Consulting Physician-Accoucheur to Queen Charlotte's Hospital, 56, Curzon-street, Mayfair, W.

1846 Brooke, Charles, M.B., F.R.S., Consulting Surgeon to the Westminster Hospital, 16, Fitzroy-square, W. (C. 1853-5. V.-P. 1864-5.)

1865 Brown, Augustus, M.D., 30, Belitha-villas, Barnsbury-park, N.

1871 Brown, Frederick Gordon, 16, Finsbury-circus, E.C.

1866 Browne, Lennox, Surgeon to the Central Throat and Ear Hospital, and to the Royal Society of Musicians, 14a, Weymouth-street, Portland-place, W.

O.M. Browne, Joseph Hullett, M.D., Physician to the St. Pancras Royal General Dispensary, 55, Gordon-square, W.C. (C. 1859-60.)

1855 Bryant, Thomas, Surgeon to Guy's Hospital, 53, Upper Brook-street, Grosvenor-square, W. (C. 1863-6.)

1854 Buchanan, George, M.D., Medical Inspector to the Privy Council, 24, Nottingham-place, Marylebone-road, W. (C. 1864-6.)

1862 Buchanan, Albert, M.B. Lond., 382, Camden-road, N.

1858 Budd, George, M.D., F.R.S., Ashleigh, Barnstaple. (C. 1862-4.)

1860 Burton, Alfred, 13, Dover-street, Piccadilly, W.

1853 Burton, John M., Lee-park Lodge, Lee, Kent, S.E.

O.M. Busk, George, F.R.S., Consulting Surgeon to the Seamen's Hospital, Greenwich, 32, Harley-street, Cavendish-square, W.C. (C. 1846-8. V.-P. 1858-60.)

1872 Butlin, Henry Trentham, Surgical Registrar to St. Bartholomew's Hospital, Assistant Surgeon to the West London Hospital, 47, Queen Anne-street, W.

1866 Butt, William Frederick, 12, South-street, Park-lane, W.

1856 Buzzard, Thomas, M.D., Physician to the National Hospital for the Epileptic and Paralysed, 56, Grosvenor-street, W. (C. 1869-70.)

1856 Callender, G. W., F.R.S., Surgeon to St. Bartholomew's Hospital, 7, Queen Anne-street, Cavendish-square, W. (C. 1865-9.)

‡1863 Campbell, Charles, M.D., Kingston, Jamaica. [Agent: Mr. H. K. Lewis, 136, Gower-street.]

†O.M. Camps, William, M.D. (C. 1856-9.)

‡1855 Carpenter, Alfred, M.D., High-street, Croydon.

1848 Carpenter, William Guest, 1, Clifton-terrace, Maida-vale, W.

1872 Carr, William, M.D., Lee-grove, Blackheath, S.E.

1871 Carter, Charles Henry, M.D., B.S. Lond., Assistant Physician to the Hospital for Women, 8, Old Cavendish-street, Cavendish-square, W.

1855 Carter, H. Vandyke, M.D., Professor of Anatomy and Physiology, Grant Medical College, Bombay. [22, Clarendon-road, Victoria-road, Kensington, W.]

†1868 Cavafy, John, M.D., Assistant Physician to, and Lecturer on Physiology at, St. George's Hospital, Physician to the Victoria Hospital for Children, 13, Arlington-street, Piccadilly, S.W.

Elected

1864 Cay, Charles Vidler, Coldstream Guards, the Hospital, Vincent-square, Westminster, S.W.

1863 Cayley, William, M.D. (Hon. Secretary), Assistant Physician to, and Lecturer on Pathological Anatomy at, the Middlesex Hospital, 58, Welbeck-street, Cavendish-square, W. (C. 1870-1. S. 1872-4.)

1869 Chaffers, Edward, Keighley, Yorkshire.

1849 Chalk, William Oliver, 3, Nottingham-terrace, Regent's-park, N.W. (C. 1856-7.)

1870 Cheadle, Walter Butler, M.D., Assistant Physician to St. Mary's Hospital, 2, Hyde-park-place, Cumberland-gate, W.

O.M. Chevers, Norman, M.D., India. (C. 1848.)

1872 Cheyne, William Romley, 27, Nottingham-place, Marylebone-road, W.

‡1858 Child, Gilbert W., 11, Norham-gardens, Oxford.

1873 Chisholm, Edwin, Camden-by-Sydney, New South Wales.

1855 Cholmeley, William, M.D., Physician to the Great Northern Hospital, and to the Margaret-street Infirmary for Consumption, 63, Grosvenor-street, W. (C. 1871-3.)

1871 Christie, Thomas Beath, M.D., Superintendent of the Royal India Asylum, Ealing, Middlesex.

1865 Church, William Selby, M.D., Assistant Physician to St. Bartholomew's Hospital, 2, Upper George-street, Bryanston-square, W. (C. 1871-3.)

†1868 Churchill, Frederick, M.B., Surgeon to the Westminster General Dispensary, 9, Pembridge-place, Bayswater, W.

1861 Clapton, Edward, M.D., Physician to St. Thomas's Hospital, 10A, St. Thomas's-street, Southwark, S.E.

1854 Clark, Andrew, M.D., Physician to the London Hospital, 16, Cavendish-Square, W. (C. 1862-5.)

1872 Clark, Andrew, Assistant Surgeon to the Middlesex Hospital, 14, Old Burlington-street, W.

1865 Clarke, Jacob Lockhart, M.D., F.R.S., 64, Harley-street, Cavendish-square, W. (C. 1868-70.)

1850 Clarke, John, M.D., Obstetric Physician to St. George's Hospital, and Physician-Accoucheur to the General Lying-in Hospital, 42, Hertford-street, Mayfair, W. (C. 1858.)

1867 Clarke, William Fairlie, M.A. (C.), Assistant Surgeon to Charing Cross Hospital, 12, Mansfield-street, Cavendish-square. (C. 1873-4.)

‡1865 Coates, Charles, M.D., Physician to the Bath United General Hospital, 10, Circus, Bath.

O.M. Cock, Edward, Consulting Surgeon to Guy's Hospital, 36, Dean-street, South, Tooley-street, S.E. (C. 1846-8. V.-P. 1856.)

1856 Cockle, John, M.D., M.A., Physician to the Royal Free Hospital, 7, Suffolk-place, Pall-mall, S.W.

O.M. Cohen, Daniel Whitaker, M.D., South-bank, Northdown-lane, Bideford, Devon.

Elected

†1866 Coles, George Charles, Surgeon to the Infirmary for Epilepsy and Paralysis, and Assistant Surgeon to the Royal South London and Central London Ophthalmic Hospitals, 20, Great Coram-street, Russell-square, W.C.

1869 Colley, N. Davies, M.B., Assistant Surgeon to Guy's Hospital, 12, St. Thomas's-street, Southwark, S.E.

1858 Cooke, Robert Thomas, Surgeon to the Scarborough Dispensary, 15, St. Nicholas-cliff, Scarborough, Yorkshire.

1871 Cooke, Thomas, Assistant Surgeon to the Westminster Hospital, 16, Woburn-place, W.C.

1866 Coombs, Rowland Hill, Mill-street, Bedford.

1851 Cooper, William White, Consulting Ophthalmic Surgeon to St. Mary's Hospital, 19, Berkeley-square, W. (C. 1860-2.)

1853 Cornish, William Robert, Madras.

1859 Coulson, Walter J., Surgeon to the Lock Hospital, 29, St. James's-place, S.W.

O.M. Coulson, William, Consulting Surgeon to St. Mary's Hospital, 1, Chester-terrace, Regent's-park, N.W. (C. 1850-3. V.-P. 1862-3.)

†1861 Couper, John, Surgeon to the London Hospital, 80, Grosvenor-street, Grosvenor-square, W. (C. 1870-2.)

1873 Coupland, Sidney, M.B., Medical Registrar, Middlesex Hospital, 33, Elsham-road, Kensington, W.

1873 Cripps, William H., St. Bartholomew's Hospital.

O.M. Crisp, Edwards, M.D., 29, Beaufort-street, Chelsea, S.W. (C. 1846-7. V.-P. 1870-2.)

1848 Critchett, George, Surgeon to the Royal London Ophthalmic Hospital, Moorfields, 21, Harley-street, W. (S. 1849. C. 1851, 1858-9. V.-P. 1866-7.)

1856 Croft, John, Surgeon to St. Thomas's Hospital, 61, Brook-street, Grosvenor-square, W. (C. 1870-2.)

‡1866 Cromarty, James Pattison, Civil Surgeon, Tavoy, Burmah. [Agents: Messrs. Fergusson & Co., 77, Clive-street, Calcutta.]

1861 Crosby, Thomas Boor, M.D., 21, Gordon-square, W.C.

1854 Cross, Robert, M.D., 42, Craven-street, Strand, W.C.

1864 Crucknell, Henry H., M.B. (C.), Physician to the Great Northern Hospital, and to the Royal Infirmary for Diseases of the Chest, City-road, 58, Welbeck-street, Cavendish-square, W. (C. 1874.)

1871 Cumberbatch, Elkin, Demonstrator of Anatomy at St. Bartholomew's Hospital, 8, Upper Brook-street, W.

1858 Cumberbatch, Laurence T., M.D., 25, Cadogan-place, Sloane-street, S.W.

1855 Curling, Thomas Blizard, F.R.S., Consulting Surgeon to the London Hospital, 39, Grosvenor-street, W. (C. 1857-60. V.-P. 1866-8.)

Elected

1873 Curnow, John, M.D., Professor of Anatomy at King's College, and Assistant Physician to King's College Hospital, 3, Warwick-street, Cockspur-street, S.W.

‡1865 Curran, William, M.D., Army Medical Staff. [Agent: Mr. H. K. Lewis, 136, Gower-street, W.C.]

1863 Dane, Thomas, 86, Finchley-road, N.W.

1873 Davidson, Alexander, M.D., Lecturer on Pathological Anatomy at the Liverpool Royal Infirmary School of Medicine, 49, Rodney-street, Liverpool.

Davies-Colley, see Colley (Davies).

O.M. Davies, Herbert, M.D., Consulting Physician to the Infirmary for Asthma, &c., and Consulting Physician to the London Hospital, 23, Finsbury-square, E.C. (C. 1849-50. V.-P. 1871.)

1847 Davis, John Hall, M.D., Physician-Accoucheur to the Middlesex Hospital, and to the Royal Maternity Charity, 24, Harley-street, Cavendish-square, W. (C. 1852-3.)

‡1859 Davis, Francis William, R.N., Surgeon to the Naval Medical Establishment, Lisbon; 11 and 12, Love-lane, Aldermanbury, E.C.

1867 Davy, Richard, Surgeon to the Westminster Hospital, 33, Welbeck-street, Cavendish-square, W.

1866 Day, William Henry, M.D., Physician to the Samaritan Free Hospital for Women and Children, 10, Manchester-square, W.

1872 Decastro, James C., M.B., 38, Rutland-gate, Knightsbridge, S.W., and Pau, France.

1871 De Liefde Temple, John, M.D. [per Mr. James Nimmo, 7, Red Lion-court, Watling-street, E.C.].

1865 De Morgan, Campbell, F.R.S., Senior Surgeon to the Middlesex Hospital, 29, Seymour-street, Portman-square, W. (C. 1867-9)

1863 Devereux, Daniel, Tewkesbury.

1856 Dick, H., M.D., 59, Wimpole-street, Cavendish-square, W.

1871 Dickinson, Edward Harriman, M.B., Physician to the Liverpool Northern Hospital, 162, Bedford-street, Liverpool.

1858 Dickinson, William Howship, M.D. (V.-P.), Physician to the Hospital for Sick Children, Physician and Lecturer on Pathology to St. George's Hospital, 11, Chesterfield-street, Mayfair, W. (C. 1866-8. S. 1869-71. V.-P. 1872-4.)

1872 Diver, Ebenezer, M.D., Caterham-valley, Surrey.

O.M. Dixon, James, Consulting Surgeon to the Royal Ophthalmic Hospital, Moorfields, 29, Lower Seymour-street, Portman-square, W. (C. 1852-6. V.-P. 1860-2.)

1872 Doran, Alban Henry Griffiths, 33, Lansdowne-road, Kensington-park, W.

†1866 Down, John Langdon H., M.D. (C.), Physician to the London Hospital, 39, Welbeck-street, Cavendish-square, W. (C. 1872-4.)

1872 Dowse, Thomas Stretch, M.D., Highgate Infirmary, N.

Elected

1866 Drewry, George Overend, M.D., Walsall, Stafford.

1865 Duckworth, Dyce, M.D., Assistant Physician to St. Bartholomew's Hospital, 11, Grafton-street, Bond-street, W.

1863 Dudfield, Thomas Orme, M.D., 8, Upper Phillimore-place, Kensington, W.

1847 Dudgeon, Robert E., M.D., 53, Montagu-square, W.

1852 Duff, George, M.D., High-street, Elgin.

1865 Duffin, Alfred Baynard, M.D. (C.), Physician to King's College Hospital, 18, Devonshire-street, Portland-place, W. (C. 1872-4.)

1868 Duke, Oliver Thomas, M.B., India.

1871 Dukes, Clement, M.B., B.S., Horton-crescent, Rugby.

1861 Dunn, Robert William, 13, Surrey-street, Strand, W.C.

1865 Du Pasquier, Claudius Francis, Surgeon Apothecary to the Queen, 62, Pall-mall, S.W.

1858 Durham, Arthur Edward, Surgeon to Guy's Hospital, 82, Brook-street, Grosvenor-square, W. (C. 1869-71.)

1848 Eden, Thomas E., Surgeon-Dentist to the Farringdon General Dispensary, Auckland House, Lower Norwood, Surrey, S.E.

1867 Edis, Arthur W., M.D., Assistant Obstetric Physician to the Middlesex Hospital, Assistant Physician to the Hospital for Women, 22, Wimpole-street, Cavendish-square, W.

1867 Ellis, James, M.D., Belle-grove Villa, Welling, Blackheath, S.E.

1847 Ellis, James, Sudbrook-park, Richmond, Surrey. [Agent: Mr. Tweedie, 337, Strand.]

1873 Engelmann, George Julius, M.D., A.M., 3003, Locust-street, St. Louis, Miss., U.S.

1846 Erichsen, John, Surgeon to University College Hospital, 6, Cavendish-place, Cavendish-square, W. (C. 1849-51. V.-P. 1863-4.)

1853 Evans, Conway, M.D., 5, Tavistock-street, Covent-garden, W.C. (C. 1867-8.)

1873 Evans, George Hay, M.D., Assistant Physician to the Middlesex Hospital.

‡1859 Ewens, John, Barton Lodge, Cerne Abbas, Dorset.

1864 Fagge, Charles Hilton, M.D., Assistant Physician to Guy's Hospital, 11, St. Thomas's-street, Southwark, S.E. (C. 1870-2.)

1862 Farquharson, Robert, M.D., Lecturer on Materia Medica at St. Mary's Hospital, 23, Brook-street, Grosvenor-square, W.

1872 Fayrer, Joseph, C.S.I., M.D., F.R.S. Ed., Hon. Physician to the Queen, Surgeon-Major Bengal Army, Member of the Indian Medical Board, 16, Granville-place, Portman-square, W.

1872 Fenn, Edward L., M.B., The Old Palace, Richmond.

1872 Fenwick, John C. J., M.D., 30, Devonshire-street, Portland-place, W.

1863 Fenwick, Samuel, M.D., Assistant Physician to the London Hospital, 29, Harley-street, W.

Elected

1848 Fergusson, Sir William, Bart., F.R.S., Surgeon to King's College Hospital, 16, George-street, Hanover-square, W. (C. 1849-50. V.P. 1851-8. *Pres.* 1859-60. V.P. 1861.)

1846 Fincham, George T., M.D., Physician to the Westminster Hospital, 13, Belgrave Road, S.W. (C. 1855.)

1870 Fish, John Crockett, M.B., 92, Wimpole-street, W.

1859 Fisher, Alexander, M.D., Assistant Surgeon, R.N., Her Majesty's Ship "Endymion."

1873 Fisher, Fred. R., St. George's Hospital, Hyde-park-corner, W.

1855 Flower, William H., F.R.S., Conservator of the Museum, Royal College of Surgeons, 39, Lincoln's-inn-fields, W.C. (C. 1862-4.)

1872 Forbes, Daniel Mackay, L.R.C.P. Ed., 213, Kingsland-road, E.

1852 Forbes, J. Gregory, 82, Oxford-terrace, Hyde-park, W. (C. 1860-3.)

†O.M. Forster, John Cooper, Surgeon to Guy's Hospital, 29, Upper Grosvenor-street, W. (C. 1857-8. V.P. 1871-3.)

‡1866 Foster, Balthazar Walter, M.D., Physician to the General Hospital, Birmingham, 16, Temple-row, Birmingham.

1866 Foster, John B., Surgeon to the Cancer Hospital, Brompton, 13, Upper Wimpole Street, W.

1872 Fotherby, Henry J., M.D., 3, Finsbury-square, E.C.

1862 Fox, Wilson, M.D., Professor of Clinical Medicine in University College, and Physician to University College Hospital, 67, Grosvenor-street, W. (C. 1868-70.)

1865 Fox, W. Tilbury, M.D., Physician to the Skin Department of University College Hospital, 14, Harley-street, W.

1858 Francis, Charles Richard, M.B., Bengal Medical Establishment, Indian Army.

O.M. Freere, J. C.

1864 Frodsham, John Mill, M.D., Streatham, S.W.

‡1858 Gairdner, William Tennant, M.D., Professor of Medicine in the University of Glasgow, 225, St. Vincent-street, Glasgow.

1870 Galton, Edmund H., Springfield House, Brixton-hill, S.W.

1870 Galton, John H., M.D., 1, Woodside, Anerley-road, Upper Norwood, S.E.

1855 Gamgee, Joseph Sampson, Surgeon to the Queen's Hospital, Birmingham, 20, Broad-street, Birmingham.

1855 Gamgee, J.

1846 Garrod, Alfred Baring, M.D., F.R.S., 10, Harley-street, Cavendish-square, W. (C. 1851. V.-P. 1863-5.)

1872 Garton, William, Royal Medical Society, Edinburgh.

1858 Gascoyen, George Green, Surgeon to the Lock Hospital, and Assistant Surgeon to, and Joint Lecturer on Surgery at, St. Mary's Hospital, 48, Queen-Anne-street, Cavendish-square, W.

1856 Gaskoin, George, Surgeon to the British Hospital for Diseases of the Skin, 7, Westbourne-park, Paddington, W.

Elected

O.M. Gay, John, Senior Surgeon to the Great Northern Hospital, 10, Finsbury-place South, E.C. (C. 1852-4. V.-P. 1870-72.)

1853 Gibbon, Septimus, M.D., 39, Oxford-terrace, Hyde-park, W.

1873 Godlee, Rickman John, M.B., B.S, Surgical Registrar to University College Hospital, 22, Henrietta-street, Cavendish-square, W.

1871 Goodhart, James Frederick, M.B., Medical Registrar to Guy's Hospital, 3, St. Thomas's-street, Southwark, S.E.

1870 Gowers, William Richard, M.D., Assistant Physician to University College Hospital, 50, Queen Anne-street, W.

1858 Gowland, Peter Y., Surgeon to St. Mark's Hospital, 34, Finsbury-square, E.C.

1867 Green, T. Henry, M.D., Physician to Charing Cross Hospital, 74, Wimpole-street, W. (C. 1871-3.)

1873 Greenfield, William Smith, M.B., B.S., Medical Registrar, St. Thomas's Hospital, 93, Wimpole-street, W.

1856 Greenhalgh, Robert, M.D., Physician-Accoucheur to St. Bartholomew's Hospital, 72, Grosvenor-street, W.

‡1855 Greenhill, William Alexander, M.D., Carlisle-parade, Hastings.

1863 Greenhow, Edward Headlam, M.D., F.R.S., Physician to the Middlesex Hospital, 14a, Manchester-square, W. (C. 1867-9.)

1871 Grigg, William Chapman, M.D., Assistant Obstetric Physician to the Westminster Hospital, and Physician to the In-patients, Queen Charlotte's Lying-in Hospital, 6, Curzon-street, Mayfair, W.

1861 Gueneau de Mussy, Henri, M.D., 15, Rue du Cirque, Paris.

1863 Gull, Sir William Withey, Bart., M.D., D.C.L., F.R.S., Consulting Physician to Guy's Hospital, 74, Brook-street, Grosvenor-square, W.

O.M. Habershon, Samuel Osborne, M.D., Physician to, and Lecturer on Medicine at, Guy's Hospital, 70, Brook-street, Grosvenor-square, W. (Re-elected 1874.)

1851 Hacon, E. Dennis, 249, Mare-street, Hackney, N.E. (C. 1872.)

†1852 Halley, Alexander, M.D., 16, Harley-street, Cavendish-square, W.

1848 Hare, Charles John, M.D. (V.-P.), 57, Brook-street, Grosvenor-square, W. (C. 1852-4. V.-P. 1874.)

†1856 Harley, George, M.D., F.R.S., 25, Harley-street, Cavendish-square, W. (C. 1862-5.)

1863 Harling, Robert Dawson, M.D. Lond., 16, Seymour-street, Portman-square, W.

1872 Harris, Henry, M.D., Trengweath-place, Redruth, Cornwall.

†1858 Hart, Ernest, 59, Queen Anne-street, W. (C. 1867-8.)

†1859 Hastings, Cecil William, M.B., 13, Queen Anne-street, Cavendish-square, W.

1870 Haward, John Warrington, 5, Montagu-street, Portman-square, W.

O.M. Hawkins, Cæsar H., F.R.S., Consulting Surgeon to St. George's Hospital, 26, Grosvenor-street, W. (V.-P. 1846-51. *Pres.* 1852-3.)

Elected

1857 HAWKSLEY, THOMAS, M.D., Physician to the Margaret-street Dispensary for Consumption, 6, Brook-street, Hanover-square, W.

1869 HAY, THOMAS BELL, L.R.C.P. Ed., 43, Caledonian-road, N.

1856 HEATH, CHRISTOPHER, Surgeon to University College Hospital, 9, Cavendish-place, Cavendish-square, W. (C. 1866-7.)

1869 HENSLEY, PHILIP J., M.D., Assistant Physician to St. Bartholomew's Hospital, 4, Henrietta Street, Cavendish-square, W.

‡1868 HESLOP, THOMAS P., M.D., Physician to the Children's Hospital, Birmingham.

O.M. HEWETT, PRESCOTT G., F.R.S., Surgeon to St. George's Hospital, 1, Chesterfield-street, Mayfair, W. (C. 1846-52. V.-P. 1854-7. *Pres.* 1863-4. V.-P. 1865-8.)

1855 HEWITT, GRAILY, M.D., Obstetric Physician to University College Hospital, 36, Berkeley-square, W. (C. 1865-7.)

1864 HICKMAN, WILLIAM, M.B., Surgeon to the Samaritan Free Hospital, 1, Dorset-square, N.W.

1868 HILL, JNO. DANIEL, Surgeon to the Royal Free Hospital, and Surgeon to the Royal Orthopædic Hospital, 17, Guilford-street, Russell-square, W.C.

1860 HILL, M. BERKELEY, M.B. (C.), Surgeon to University College Hospital, and Surgeon for Out-Patients to the Lock Hospital, 55, Wimpole-street, Cavendish-square, W. (C. 1874.)

1867 HILL, SAMUEL, M.D., 22, Mecklenburg-square, W.C.

†O.M. HILTON, JOHN, F.R.S. (V.-P.), Consulting Surgeon to Guy's Hospital, 10, New Broad-street, E.C. (C. 1848-50. V.-P. 1863-64, 1873-4. *Pres.* 1871-2.)

1852 HOGG, JABEZ, Surgeon to the Westminster Ophthalmic Hospital, 1, Bedford-square, W.C. (C. 1860-2.)

1847 HOLMAN, H. MARTIN, M.D., Hurstpierpoint, Sussex.

1854 HOLMES, TIMOTHY, Surgeon-in-Chief to the Metropolitan Police, Surgeon to St. George's Hospital, 18, Great Cumberland-place, Hyde-park, W. (C. 1862-3. S. 1864-7. C. 1868. V.-P. 1869-71.)

1850 HOLT, BARNARD WIGHT, Consulting Surgeon to the Westminster Hospital, 14, Savile-row, W. (C. 1853.)

O.M. HOLTHOUSE, CARSTEN (V.-P.), Surgeon to, and Lecturer on Clinical Surgery at, the Westminster Hospital, 3, George-street, Hanover-square, W. (C. 1852-4. V.-P. 1874.)

1864 HOOD, WHARTON P., M.D., 65, Upper Berkeley-street, Portman-square, W.

1865 HOOPER, JOHN HARWOOD, M.B., Auckland, New Zealand.

1870 HOPE, WILLIAM, M.D., 5, Bolton-row, Mayfair, W.

1866 HOWARD, EDWARD, M.D., Oaklands, Penge, Surrey.

†1856 HUDSON, JOHN, M.D., 11, Cork-street, Bond-street, W.

Elected

1854 Hulke, John Whitaker, F.R.S. (V.-P.), Surgeon to the Middlesex Hospital, and Surgeon to the Royal London Ophthalmic Hospital, 10, Old Burlington-street, W. (C. 1863-5. S. 1868-72. V.-P. 1873-4.)

1854 Hulme, Edward Charles, Woodbridge-road, Guildford.

1853 Humby, Edwin, M.D., 83, Hamilton-terrace, St. John's Wood, N.W.

1866 Hunter, Charles, 30, Wilton-place, Belgrave-square, S.W.

1852 Hutchinson, Jonathan, Surgeon to the London Hospital, and to the Royal London Ophthalmic Hospital, Moorfields, 4, Finsbury-circus, E.C. (C. 1856-9. V.-P. 1872-3.)

1865 Jackson, J. Hughlings, M.D., Physician to the London Hospital, Physician to the National Hospital for the Paralysed and Epileptic, 3, Manchester-square, W. (C. 1872-3.)

1859 Jackson, Thomas Carr, Surgeon to the Great Northern Hospital, 91, Harley-street, Cavendish-square, W.

‡1853 Jardine, John Lee, Capel, near Dorking, Surrey.

1847 Jay, Edward, 112, Park-street, Grosvenor-square, W.

O.M. Jenner, Sir William, Bart., M.D., D.C.L., K.C.B., F.R.S. (President), Physician to University College Hospital, 63, Brook-street, Grosvenor-square, W. (C. 1850-3. V.-P. 1862-4. *Pres.* 1873-4.)

1866 Jessop, Thomas Richard, 31, Park-square, Leeds.

1855 Johnson, Edward, M.D., 19, Cavendish-place, Cavendish-square, W.

O.M. Johnson, George, M.D., F.R.S., Physician to King's College Hospital, 11, Savile-row, W. (C. 1846-50. V.-P. 1863-4.)

1854 Johnstone, Athol A. W., 20, Regency-square, Brighton.

1853 Jones, Sydney, M.B., Assistant Surgeon to St. Thomas's Hospital, 10*b*, St. Thomas's-street, Southwark, S.E. (C. 1864-6.)

1862 Jones, Thomas, M.D., Assistant Physician to the Victoria Hospital for Sick Children, 19, Chapel Street, Belgrave-square, S.W.

1858 Jones, William Price, M.D., Claremont-road, Surbiton, Kingston.

1860 Jones, Walter, College-yard, Worcester.

1867 Kelly, Charles, M.D. (C.), Medical Officer of Health for the West Sussex Combined Sanitary District, Horsham, Sussex. (C. 1874.)

1846 Kent, Thomas J., 60, St. James's-street, S.W.

1852 Kershaw, W. Wayland, M.D., Kingston-on-Thames.

1872 Kesteven, William B., 401, Holloway-road, N.

1859 Kiallmark, Henry Walter, 66, Prince's-square, Bayswater, W.

1867 King, Edwin Holborow, 18, Stratford-place, Oxford-street, W.

1871 King, Robert, M.B., Assistant Physician to the Middlesex Hospital, 48, Harley-street, W.

1852 Kingdon, J. Abernethy, Surgeon to the City Dispensary, and to the City of London Truss Society, 2, New Bank-buildings, Lothbury, E.C.

Elected

‡1856 Kingsley, Henry, M.D., Physician to the Stratford Infirmary, Stratford-on-Avon, Warwickshire.

‡1865 Lanchester, Henry Thomas, M.D., 53, High-street, Croydon.

1851 Langmore, John C., M.B., 20, Oxford-terrace, Hyde-park, W. (C. 1858-61.)

1865 Langton, John, Assistant Surgeon to St. Bartholomew's Hospital, 18, Harley-street, Cavendish-square, W.

1869 Larcher, O., M.D. Par., Laureate of the Institute of France, of the Medical Faculty and Academy of Paris, 97, Rue de Passy, Paris.

1849 Latham, Peter Mere, M.D., late Physician to St. Bartholomew's Hospital, Torquay. (*Pres.* 1850-1. V.-P. 1852-3.)

1873 Latham, Peter Wallwork, M.D., Physician to Addenbrooke Hospital, Cambridge, 17, Trumpington-street, Cambridge.

1867 Lawrence, Henry Cripps, Registrar, Queen Charlotte's Lying-in Hospital, Marylebone-road, 158, Queen's-road, Bayswater, W.

1853 Lawrence, Henry John Hughes (C.), Surgeon, Grenadier Guards, Hospital, Rochester-row, Westminster, S.W. (C. 1873-4.)

1859 Lawson, George, Surgeon to the Middlesex Hospital, and Surgeon to the Royal London Ophthalmic Hospital, Moorfields, 12, Harley-street, Cavendish-square, W. (C. 1870-1.)

1865 Leach, Harry, Medical Officer of Health for the Port of London, Greenwich.

1857 Leared, Arthur, M.D. (C.), Physician to the Great Northern Hospital, 12, Old Burlington-street, W. (C. 1874.)

1852 Lee, Henry, Surgeon to St. George's Hospital, 9, Savile-row, W. (C. 1860-2.)

1867 Lees, Joseph, M.D., Demonstrator of Anatomy at St. Thomas's Hospital, 112, Walworth-road, S.E.

1868 Legg, John Wickham, M.D. (C.), Physician to the Casualty Department, and Demonstrator of Morbid Anatomy, St. Bartholomew's Hospital, 47, Green-street, Park-lane, W. (C. 1874.)

1852 Leggatt, Alfred, 13, William-street, Lowndes-square, S.W. (C. 1866-7.)

1865 Leighton, Edmund Thomas, M.B.

‡1867 Leudet, T., M.D. Par., Professor of Clinical Medicine, Rouen, France. [M. Kliensieck, Libraire, Rue de Lille, 11, Rouen, per Messrs. Longman.]

1861 Lichtenberg, George, M.D., 47, Finsbury-square, E.C.

1848 Little, William John, M.D., 18, Park-street, Grosvenor-square, W. (C. 1851-2. V.-P. 1856-9.)

†1862 Little, Louis S., China.

1874 Liveing, Edward, M.D., 52, Queen Anne-street, Cavendish-square, W.

1863 Liveing, Robert, M.D., Physician to the Middlesex Hospital, 11, Manchester-square, W.

Elected

1873 Lucas, R. Clement, M.B., 4, St. Thomas's-street, S.E.

1873 Lucey, William C., M.D., Junction-road, Upper Holloway.

1871 McCarthy, Jeremiah, M.A., Assistant Surgeon to the London Hospital, 26, Finsbury-square, E.C.

1873 McConnell, Frederick, Medical College, Calcutta. [Per Grindlay & Co., Parliament-street.]

1871 MacCormac, William, Surgeon to St. Thomas's Hospital, 13, Harley-street, W.

1858 Mackay, Allan Douglas, M.B., Stony Stratford, Bucks.

1873 McKellar, Peter H., M.B., Medical Officer, Fever Hospital, Stockwell, S.W.

1870 Mackenzie, George Welland, 15, Hans-place, Sloane-street, S.W.

1870 Mackenzie, John T., Bombay, India [East India United Service Club, 14, St. James's-square].

1864 Mackenzie, Morell, M.D., 13, Weymouth-street, Portland-place, W.

1865 MacLaurin, H. N., M.D.

1857 Marcet, William, M.D., F.R.S., 1, Place Massena, Nice. (C. 1869-71.)

1868 Marsh, F. Howard, Assistant Surgeon to the Hospital for Sick Children, Assistant Surgeon to St. Bartholomew's Hospital, 36, Bruton-street, Berkeley-square.

1846 Marshall, John, F.R.S., Surgeon to University College Hospital, 10, Savile-row, W. (C. 1861.)

1856 Martin, Robert, M.D., 51, Queen Anne-street, Cavendish-square, W. (C. 1871-2.)

1852 Martyn, Samuel, M.D., Physician to the Bristol General Hospital, 8, Buckingham-villas, Clifton, Bristol.

1860 Mason, Francis (C.), Assistant Surgeon to St. Thomas's Hospital, 5, Brook-street, Grosvenor-square, W. (C. 1873-4.)

1867 Mason, Philip Brookes, Burton-on-Trent.

†1858 Maunder, Charles F., Surgeon to the London Hospital, 16, Queen Anne-street, Cavendish-square, W. (C. 1869-71.)

‡1852 May, George, Jun., M.B., Surgeon, Royal Berkshire Hospital, Reading.

1859 Messer, John Cockburn, M.D., Assistant Surgeon, R.N., Her Majesty's Ship "Edinburgh," Queensferry, N.B.

‡1867 Mickley, Arthur George, M.B., Derby-road, Nottingham.

1866 Mickley, George, M.A., M.B., Three Counties Asylum, near Arlesey, Baldock, Herts.

†1859 Montefiore, Nathaniel, 36, Hyde-park-gardens, W.

1861 Morehead, Charles, M.D., 11, North Manor-place, Edinburgh.

1847 Morgan, John, 3, Sussex-place, Hyde-park-gardens, W. (C. 1856-8.)

1874 Morison, Alexander, M.B., C.M., 70, Marquess-road, Canonbury, N.

1869 Morris, Henry, M.A., M.B., Assistant Surgeon to, and Lecturer on Anatomy at, the Middlesex Hospital, 19, Bedford-square, W.C.

Elected

1860 Moxon, Walter, M.D., Physician to Guy's Hospital, 6, Finsbury-circus, E.C. (C. 1868-70.)

1854 Murchison, Charles, M.D., LL.D. Edinb., F.R.S. (Treasurer), Physician to, and Lecturer on Medicine at, St. Thomas's Hospital, and Consulting Physician to the London Fever Hospital, 79, Wimpole-street, W. (C. 1859-62. S. 1865-8. T. 1869-73.)

1872 Murray, J. Jardine, 99, Montpellier-road, Brighton.

1864 Myers, Arthur B. R., Coldstream Guards' Hospital, Vincent-square, Westminster, S.W. (C. 1872-3.)

1873 Nettleship, Edward, 39, Stepney-green, E.

1865 Newman, William, M.D., Stamford, Lincolnshire.

1868 Nicholls, James, M.D., Chelmsford, Essex.

1865 Nicoll, Charles R., M.D., Resident Medical Officer to the Charter House, 17, Charterhouse-square, E.C. (C. 1872-3.)

1864 Norton, Arthur T., Assistant Surgeon to St. Mary's Hospital, 6, Wimpole-street, Cavendish-square, W.

1856 Nunn, Thomas William, Surgeon to the Middlesex Hospital, 8, Stratford-place, Oxford-street, W. (C. 1864-6.)

1871 Nunneley, Frederick Barham, M.D., 56, Friar-gate, Derby.

1873 O'Farrell, George Plunkett, M.B., Tangier House, Boyle, Ireland.

1850 Ogle, John W., M.D., Physician to St. George's Hospital, 30, Cavendish-square, W. (C. 1855-6. S. 1857-60. C. 1861-3. V.-P. 1865-8.)

1860 Orange, William, M.D., Broadmoor, Wokingham, Berkshire.

1865 Owles, James Allden, M.D., 204, Burlington-street, Liverpool.

1870 Paget, Sir James, Bart., F.R.S., D.C.L., Consulting Surgeon to St. Bartholomew's Hospital, 1, Harewood-place, Hanover-square, W.

1872 Parker, Robert William, House Surgeon to the Hospital for Sick Children, 49, Great Ormond-street, W.C.

1853 Parkinson, George, 50, Brook-street, Grosvenor-square, W.

1854 Part, James, M.D., 89, Camden-road, Camden-town, N.W.

1865 Pavy, Frederick William, M.D., F.R.S. (C.), Physician to Guy's Hospital, 35, Grosvenor-street, W. (C. 1872-4.)

1868 Payne, Joseph Frank, B.A., M.B. (C.), Assistant Physician to St. Thomas's Hospital, 6, Savile-row, W. (C. 1873-4.)

O.M. Peacock, Thomas Bevill, M.D. (Trustee), Physician to St. Thomas's Hospital, and Physician to the City of London Hospital for Diseases of the Chest, 20, Finsbury-circus, E.C. (C. 1846-9. S. 1850-1 V.-P. 1852-6. C. 1858-61. *Pres.* 1865-6. V.-P. 1867-70.)

1872 Pearce, Joseph Chaning, M.B., C.M., The Manor House, Brixton-rise, S.W.

1863 Pearson, David R., M.D., 23, Upper Phillimore-place, Kensington, W.

Elected

‡1847 SANKEY, W. H. OCTAVIUS, M.D., Sandywell-park, near Cheltenham. (C. 1855.)

1871 SAUNDERS, CHARLES EDWARD, M.D., 21, Lower Seymour-street, Portman-square.

1873 SAVAGE, GEORGE HENRY, M.D., Lecturer on Mental Diseases at Guy's Hospital, Bethlem Royal Hospital, St. George's-road, S.E.

1851 SCOTT, JOHN, Surgeon to the Hospital for Women, Soho-square, 49, Harley-street, Cavendish-square, W.

‡1847 SEATON, EDWARD C., M.D., Rochester House, Surbiton. (C. 1859-61.)

1852 SEMPLE, ROBERT HUNTER, M.D., Physician to the Bloomsbury Dispensary, 8, Torrington-square, W.C. (C. 1859-61.)

1872 SERGEANT, EDWARD, St. Thomas's Hospital.

1856 SHILLITOE, BUXTON, Surgeon to the Great Northern Hospital, and to the Lock Hospital, 34, Finsbury-circus, E.C.

1855 SIBLEY, SEPTIMUS W., 12, New Burlington-street, W. (C. 1863-5.)

1849 SIBSON, FRANCIS, M.D., F.R.S., Consulting Physician to St. Mary's Hospital, 59, Brook-street, Grosvenor-square, W. (C. 1856-7. V.-P. 1866-9.)

1847 SIEVEKING, EDWARD H., M.D., Physician to St. Mary's Hospital, 17, Manchester-square, W. (C. 1854-7. V.-P. 1864-5.)

O.M. SIMON, JOHN, F.R.S., D.C.L., Surgeon to St. Thomas's Hospital, 40, Kensington-square, W. (C. 1846-8. V.-P. 1855-9. *Pres.* 1867-8. V.-P. 1869-71.)

1866 SIMS, FRANCIS MANLEY BOLDERO, Assistant Surgeon to the Hospital for Diseases of the Skin, and Surgeon to the St. George's Dispensary, 25, Half-moon-street, Piccadilly, W.

1865 SIMS, J. MARION, M.D., 267, Madison-avenue, New York.

1872 SMITH, GILBART, M.B., Visiting Physician to the Margaret-street Infirmary for Consumption, 68, Harley-street, Cavendish-square, W.

1863 SMITH, HENRY (C.), Surgeon to King's College Hospital, 82, Wimpole-street, Cavendish-square, W. (C. 1873-4.)

1866 SMITH, HEYWOOD, M.D., Physician to the Hospital for Women, 2, Portugal-street, Grosvenor-square, W.

1865 SMITH, PHILIP HENRY PYE, M.D. (C.), Assistant Physician to Guy's Hospital, 31, Finsbury-square, E.C. (C. 1874.)

1846 SMITH, PROTHEROE, M.D., Physician to the Hospital for Women, 42, Park-street, Grosvenor-square, W.

1873 SMITH, RICHARD T., M.D., Physician to the St. Pancras Dispensary, 21, Haverstock-hill.

1869 SMITH, ROBERT SHINGLETON, M.D., Lecturer on Physiology, Bristol Medical School, 1, Leicester-place, Clifton, Bristol.

1856 SMITH, SPENCER, Surgeon to St. Mary's Hospital, 9, Queen Anne-street, Cavendish-square, W.

1856 SMITH, THOMAS, Surgeon to St. Bartholomew's Hospital, 5, Stratford-place, Oxford-street, W. (C. 1867-9.)

Elected

1866 Smith, William, Melbourne, Australia.

1870 Smith, William Johnson, Surgeon, Seamen's Hospital, Greenwich, S.E.

1869 Smith, William Wilberforce, 2, Eastbourne-terrace, Paddington, W.

1870 Snow, William Vicary, M.D., Richmond Gardens, Bournemouth.

1868 Southey, Reginald, M.D., Physician to St. Bartholomew's Hospital, 6, Harley-street, Cavendish-square, W.

1873 Sparks, Edward Isaac, M.B., 46, Queen Anne-street, Cavendish.square, W.

1868 Spry, George Frederick, M.D., Assistant Surgeon, 2nd Life Guards, Cavalry Barracks, Windsor.

1866 Squarey, Charles Edward, M.B., Assistant Physician to the Hospital for Women, 13, Upper Wimpole-street, W.

1855 Squire, William, M.D., 6, Orchard-street, Portman-square, W. (C. 1870-2.)

1861 Squire, Alexander Balmanno, 9, Weymouth-street, Portland-place, W.

1854 Stewart, William Edward, 12, Weymouth-street, Portland-place, W.

†1853 Streatfeild, J. F., Surgeon to the Royal London Ophthalmic Hospital, Moorfields, and Ophthalmic Surgeon to University College Hospital, 15, Upper Brook-street, W.

1863 Sturges, Octavius, M.D., Assistant Physician to the Westminster Hospital, 85, Wimpole-street, W.

1871 Sutherland, Henry, M.D., 6, Richmond Terrace, Whitehall, S.W.

1864 Sutton, Henry G., M.B., Physician to the London Hospital, Physician to the City of London Hospital for Diseases of the Chest, 9, Finsbury-square, E.C.

‡1867 Swain, William Paul, 20, Ker-street, Devonport.

‡1857 Symonds, Frederick, Surgeon to the Radcliffe Infirmary, 35, Beaumont-street, Oxford.

1870 Tait, Robert Lawson, Surgeon to the Birmingham and Midland Hospital for Women, 7, Great Charles-street, Birmingham.

‡1856 Tapp, W. Denning, Hillside-house, Hatherley-road, Cheltenham.

1864 Tatham, John, M.D., 1, Wilton-place, Knightsbridge, S.W.

1870 Tay, Waren, Assistant Surgeon to, and Demonstrator of Practical Anatomy at, the London Hospital, 4, Finsbury-square, E.C.

1871 Taylor, Frederick, M.D., Assistant Physician to Guy's Hospital, 15, St. Thomas's-street, S.E.

1861 Teevan, William Frederic, Surgeon to the West London Hospital, 10, Portman-square, W.

1870 Thomas, John Davies, M.B., University College Hospital (India).

1852 Thompson, Sir Henry, Knt., Surgeon to University College Hospital, 35, Wimpole-street, Cavendish-square, W. (S. 1859-63. C. 1865-67. V.-P. 1868-70.)

1874 Thornton, John Knowsley, M.B., 83, Park-street, Grosvenor-square.

1872 Thornton, William Pugin, 42, Devonshire-street, Portland-place, W.

Elected

1865 THOROWGOOD, J. C., M.D., Lecturer on Materia Medica at the Middlesex Hospital, Physician to the City of London Hospital for Diseases of the Chest, 61, Welbeck-street, W.

1856 TOMES, J., F.R.S., Consulting Dental Surgeon to the Middlesex Hospital, 37, Cavendish-square, W. (C. 1867-9.)

1864 TONGE, MORRIS, M.D., Harrow-on-the-Hill, Middlesex.

1872 TOWNSHEND, THOMAS SUTTON, 4, Stanhope-terrace, Cromwell-road, S.W.

1851 TROTTER, JOHN W., Assistant Surgeon, Coldstream Guards Hospital, Vincent-square, Westminster, S.W., and the Tower. (C. 1865-9.)

1859 TRUMAN, EDWIN THOMAS, Surgeon Dentist in Ordinary to Her Majesty's Household, 23, Old Burlington-street, W.

1867 TUCKWELL, HENRY MATTHEWS, M.D., Physician to the Radcliffe Infirmary, 64, High-street, Oxford.

1858 TUDOR, JOHN, Dorchester, Dorset.

1863 TURNER, JAMES SMITH, Dental Surgeon to the Middlesex Hospital, 12, George-street, Hanover-square, W.

1858 TURTLE, FREDERICK, Clifton-lodge, Woodford, Essex.

1854 VASEY, CHARLES, Surgeon-Dentist to St. George's Hospital, 5, Cavendish-place, Cavendish-square, W.

1867 VENNING, EDGCOMBE, Assistant Surgeon, 1st Life Guards, Knightsbridge Barracks, and 24, Belgrave-square, S.W.

1865 VERNON, BOWATER JOHN, Ophthalmic Surgeon to St. Bartholomew's Hospital, 44A, Wimpole-street, Cavendish-square, W.

1868 VINCENT, OSMAN, Surgeon to the Great Northern Hospital, 45, Seymour-street, Portman-square, W.

‡1867 WAGSTAFFE, WILLIAM WARWICK, B.A. (C.), Assistant Surgeon to St. Thomas's Hospital, 2, Palace-road, Albert Embankment, S.E. (C. 1874.)

O.M. WAITE, CHARLES D., M.D., Senior Physician to the Westminster General Dispensary, 3, Old Burlington-street, W.

1873 WALSHAM, WILLIAM J., M.B., C.M., 426, Camden-road, N.

1859 WALTERS, JOHN, M.B., Reigate, Surrey.

1847 WARD, T. OGIER, M.D., 11, Place de la Mare, Caen. (C. 1851-3.)

1858 WARDELL, JOHN RICHARD, M.D., Calverley-paré, Tunbridge Wells.

1855 WATSON, SIR THOMAS, Bart., M.D., F.R.S., 16, Henrietta-street, Cavendish-square, W. (*Pres.* 1857-8. V.-P. 1859-63.)

1865 WATSON, W. SPENCER, Surgeon to the Great Northern Hospital; Surgeon to the Royal South London Ophthalmic and to the Central London Ophthalmic Hospitals, 7, Henrietta-street, Cavendish-square, W.

1860 WAY, JOHN, M.D. (C.), 4, Eaton-square, S.W. (C. 1873-4.)

†1858 WEBER, HERMANN, M.D., Physician to the German Hospital, 10, Grosvenor-street, Grosvenor-square, W. (C. 1867-70.)

1864 WELCH, THOMAS DAVIES, M.D., Wyndham House, Ryde, Isle of Wight.

Elected

1861 Wells, John Soelberg, Ophthalmic Surgeon to King's College Hospital, and Assistant Surgeon to the Royal London Ophthalmic Hospital, 16, Savile-row, W.

1853 Wells, Thomas Spencer, Surgeon to the Samaritan Free Hospital for Women and Children, 3, Upper Grosvenor-street, W. (C. 1865-8.)

†1851 West, Charles, M.D., Physician to the Hospital for Sick Children, 61, Wimpole-street, Cavendish-square, W. (C. 1856-7.)

1867 Whipham, Thomas Tillyer, M.B., Assistant Physician to St. George's Hospital, 37, Green-street, Grosvenor-square, W.

1869 Whipple, John H. C., M.D., Assistant Surgeon, 1st Battalion Coldstream Guards, Hospital, Vincent-square, Westminster, S.W.

‡1868 Whitehead, Walter, 248, Oxford-road, Manchester.

1870 Wicksteed, Francis William, Field House, Walthamstow, Essex.

1867 Wilcox, Richard Wilson, Temple-square, Aylesbury, Bucks.

1869 Wilkin, John F., M.D., M.C., The Leas, Folkestone, Kent.

1871 Wilkinson, J. Sebastian, Surgeon to the Central London Ophthalmic Hospital, 60, Wimpole Street, W.

1864 Wilks, Alfred, G. P., M.A., M.B., Charlemont House, Spencer road, Ryde, Isle of Wight.

1853 Wilks, Samuel, M.D., F.R.S., Physician to Guy's Hospital, 77, Grosvenor-street, W. (C. 1857-60. V.-P. 1869-72.)

1869 Williams, Albert, M.B., 4, York-terrace, Dartmouth-road, Sydenham, S.E.

O.M. Williams, C. J. B., M.D., F.R.S., Consulting Physician to the Hospital for Consumption and Diseases of the Chest, Brompton, 49, Upper Brook-street, Grosvenor-square, W. (*Pres.* 1846-47. V.-P. 1848-52. C. 1853-55. V.-P. 1858-61.)

‡1858 Williams, Charles, Assistant Surgeon to the Norfolk and Norwich Hospital, 9, Prince of Wales-road, Norwich.

1866 Williams, Charles Theodore, M.B., Physician to the Hospital for Consumption and Diseases of the Chest, Brompton, 78, Park-street, Grosvenor-square, W.

1872 Williams, John, M.D., Assistant Obstetric Physician to University College Hospital, 28, Harley-street, Cavendish-square, W.

1864 Williams, W. Rhys, M.D., Bethlehem Royal Hospital, Lambeth-road, S.E.

1863 Willis, Francis, M.B., Braceborough, Stamford.

1859 Wilson, Edward Thomas, M.B., Montpelier-terrace, Cheltenham.

1859 Wilson, Robert James, F.R.C.P. Ed., 7, Warrior-square, St. Leonard's-on-Sea.

1863 Wiltshire, Alfred, M.D., Assistant Obstetric Physician to St. Mary's Hospital, 57, Wimpole-street, Cavendish-square, W.

‡1861 Windsor, Thomas, Surgeon to the Salford Royal Hospital, 44, Ardwick-green, Manchester.

1865 Witherby, William H., M.D., Pitt-place, Coombe, Croydon.

Elected

1850 Wood, John, F.R.S. (V.-P.), Surgeon to King's College Hospital, 68, Wimpole-street, W. (C. 1857-59. V.-P. 1872-4.)

1854 Wood, William, M.D., Physician to St. Luke's Hospital, 99, Harley-street, W.

1865 Workman, Charles John, M.D., Teignmouth, Devon.

1863 Worley, William Charles, 1, New North-road, Hoxton, N.

1859 Wotton, William Gordon, King's Langley, Herts.

1852 Wright, Edward John, 169, Clapham Road, S.W.

1872 Wyman, John Sanderson, M.B., 1, Grove-terrace, The Grove, Hammersmith.

1869 Wyman, W. S., M.D., Westlands, Upper Richmond-road, Putney, S.W.

1869 Yeo, J. Burney, M.D., Assistant Physician to King's College Hospital, and to the Brompton Hospital for Consumption, 44, Hertford-street, Mayfair, W,

1872 Young, Henry, M.B., Monte Video, South America. [19, Bedford square.]

ANNUAL REPORT OF COUNCIL.

1873-74.

The Council is pleased to be again able to congratulate the members upon the continued prosperity and usefulness of the Society.

The large attendance at the meetings sufficiently attests the high estimate formed of the importance of the work done by the members.

The interest of many of the specimens has been augmented, and the scientific value of the reports guaranteed by the continued labours of the Committee of Reference for Morbid Growths.

The valuable reports which have been furnished by this Committee during the past few years have induced the Council to appoint another similar Committee for the special investigation of specimens of *chemical* rather than of histological interest. The Council congratulates the members on the list of names of those of their number skilled in chemical research who have consented to act on this committee, namely, Dr. George Harley, Dr. Ralfe, Dr. B. Sanderson, Dr. King, Dr. Dickinson, Dr. Legg, and Dr. Pavy. Whilst looking forward hopefully to the addition thus likely to accrue to the value of the 'Transactions,' the Council is not unmindful of the necessity for careful consideration of the heavy expense attending all chemical research before submitting specimens hastily for investigation by this Committee.

The unexpected development of the recent provision for the discussion of special pathological subjects into a debate sustained with unflagging zeal during three entire meetings seems to call for some special notice in our Annual Report. The keen interest excited by Dr. Wilson Fox's paper on the 'Anatomical Relation of Pulmonary Phthisis to Tubercle of the Lungs' was shown by the prolonged

debate which followed it, and by the unprecedented attendance of members and visitors at the meetings. The publication of the entire debate in the 'Transactions' constitutes a novel, but it is trusted not unimportant feature in a volume which, in regard of its ordinary reports, is fully up to the average excellence and interest. At the same time the Council ventures to express the opinion, that future debates of the kind may be conveniently condensed, so as to interfere less with the ordinary work of the Society, at the same time that no check is placed on the full expression of the views and observations of the members on any important subject.

In order to promote the regular demonstration of microscopical specimens—a branch of pathology daily increasing in importance and interest—the Council is taking steps for the purchase of extra microscopes, with convenient illumination for use at the meetings.

The Society now numbers 522 members. During the past year we have had to mourn the loss of eight of our members by death, namely, Dr. Benjamin Godfrey, Mr. Richard Partridge, Mr. John C. Martin, Dr. Franklin Gould, Dr. H. Bence Jones, Mr. Charles Robinson, Dr. R. C. Foreman, and Dr. John Murray. Five have resigned.

On the other hand, 35 new names have been added to our list of members.

The Treasurer's balance sheet shows that in financial as in scientific matters the Society continues to flourish.

The total receipts during the past year have amounted to £630 11*s.*, of which £532 3*s.* 4*d.*, has been expended, including £240 6*s.* 11*d.*, the cost of the volume for the year, and £163 9*s.* 9*d.*, for the purchase of Consols, leaving a balance in the Treasurer's hands of £98 7*s.* 8*d.*

WILLIAM JENNER.

THE PATHOLOGICAL SOCIETY,

Dr. *In Account with the Treasurer,* Dr. MURCHISON. **Cr.**

To Meetings: 1873.	£	s.	d.	£	s.	d.
Payment to Royal Medical and Chirurgical Society for use of Rooms, &c. ...				63	0	0
Refreshments, Waiters, and Management of Meetings				31	10	0
Black Board for Meetings.....				2	6	0
Petty Cash per Hon. Secretaries.....	3	15	1			
Ditto per Mr. Wheatley	4	19	4			
				8	14	5
Stationery (Wodderspoon)	7	16	0			
Ditto, Receipt Books (Odell)	0	17	0			
				8	13	0
Assistance to Secretaries (Mr. Wheatley) ...				7	7	0
Collection of Subscriptions and Accounts ...				13	16	0
Posting Ledger (McDermot)				1	10	0
Committee on Morbid Growths				5	0	0
'Transactions,' Expenses of Vol. XXIV (600 copies):						
Printing (Adlard)	150	18	11			
Woodcuts (Butterworth and Heath) ...	20	11	0			
Lithography (G. H. Ford).....	32	12	0			
Ditto (W. West).....	2	5	0			
Ditto (Mintern)	29	17	0			
Composition of Index (Mr. Wheatley)...	3	3	0			
				240	6	11
Purchase of £163 9*s.* 9*d.* Consols				150	0	0
Balance carried down				98	7	8
				£630	11	0

1873.	£	s.	d.	£	s.	d.
By Balance at Bankers', January, 1873				160	17	2
Subscriptions received:						
335 Annual Subscriptions for 1872-73...	351	15	0			
3 ditto, Arrears	3	3	0			
26 Entrance Fees	27	6	0			
1 Composition Fee, Resident Member	10	10	0			
8 ditto, Non-Resident Members	16	16	0			
				409	10	0
'Transactions,' Sale of.....				42	2	5
Dividends received:						
On £529 8*s.* 6*d.*, January, 1873	7	16	2			
On £692 18*s.* 3*d.*, July, 1873	10	5	3			
				18	1	5
				£630	11	0

Balance brought down, at Bankers' £98 7 8

Examined and found correct,

Scrutineers, { C. THEODORE WILLIAMS,
MARCUS BECK.

LIST OF SPECIMENS AND REPORTS

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REPORT.

SESSION 1873-74.

I. DISEASES, ETC., OF THE NERVOUS SYSTEM.

1. *Fractured spine; pressure upon the cord in the upper dorsal region.*

By T. S. Dowse, M.D.

H. S—, æt. 25, admitted into the Central London Sick Asylum April 2nd, 1873. Died October 3rd, 1873.

On the 30th of September, 1872, this patient fell from a scaffold thirty feet high, which rendered him insensible for half an hour, and upon recovering consciousness he found the lower extremities to be completely paralysed. There was priapism, retention of the urine, and involuntary discharge of fæces.

Upon examination it was found that there was anæsthesia from the fourth rib downwards, with the loss of motor power in the legs, and although there was no marked displacement, yet pressure upon the spine of the third dorsal vertebræ gave him great pain, and fracture through its body was diagnosed.

Although direct communication was cut off between the sensorium and the lower limbs, yet they were frequently subject to automatic movements of which he was unconscious, and not infrequently were the legs found hanging over the edge of the bed. He continued in this condition with little alteration for some months. The bowels were obstinately constipated, and the urine highly ammoniacal, loaded with pus, mucous cells, and bladder epithelium. It now made its escape involuntarily from the bladder, whereas before it was retained, and there was some slight indication of returning

sensation in the lower limbs; so much so that he was able to appreciate reflex movements, and the total insensibility from the knees to the feet became modified into a feeling of heaviness with occasional formication, and sensation of pins and needles. He complained of a feeling in the abdomen as though a tight cord were bound round it.

On the 19th of September, a fortnight before his death, I made the following notes:

"Intelligence perfect, memory in no way affected, there is no palsy of the upper extremities, and no muscular atrophy. The intercostal muscles act fairly well, and there is tolerably good chest-expanding power. The line of demarcation between sensibility and insensibility is on a level with the fourth rib anteriorly, and with the third dorsal spine posteriorly. I could not help observing the extreme sensibility of the direct motor sympathetic fibres over the parts devoid of sensation, for when the skin was only slightly irritated marked hyperæmia at once resulted. There was no control over the bladder, but he was conscious of the urine passing along the urethra. There was complete absence of motor power in the lower limbs, and when raised he complained of a painful sensation running up them to the groins. They were both œdematous. The cutaneous insensibility was complete, and he does not feel when a pin is drawn across the skin, or when a hand is evenly and gently pressed upon the limbs. When the kneecap is firmly pressed upon it sends a pain up to the abdomen.

"He is unable to appreciate the sense of pressure in reference to its localization. This, however, is more evident upon the right than upon the left leg. When I strike the former he says it is in the left, but when I strike the left he seems conscious of it. There is a large sloughing bedsore upon the sacrum."

Shortly after this he changed for the worse: his breathing became weak and panting. At times there was urgent dyspnœa, and he occasionally suffered from violent attacks of shivering followed by cold clammy sweats. In this condition he expired.

Post-mortem.—Upon making the *post-mortem* twenty-four hours after death the brain and its membranes were found to be healthy, but upon removing the cord the seat of lesion was found to exist in the upper dorsal region. When taken from the spinal cavity and laid upon the table it flattened laterally from the ninth dorsal nerves upwards. But below this to the second lumbar it retained

its natural appearance. Upon slitting up the dura mater anteriorly and posteriorly, it was easily removed from the arachnoid surface until one came to the seat of lesion. Here it had united with the other membranes and the substance of the cord. The depressed portion of the cord was about an inch in length, and appeared to have undergone entire atrophic degeneration. The cervical portion above it was deeply congested, and below there was extensive and general softening. The lungs were inflated, and filled the thoracic cavity. The heart was healthy.

Report on Dr. Dowse's case.—The principal lesions found in different parts of the spinal cord were—1. Great dilatation and congestion of the blood-vessels, with disintegration of the nerve-substance surrounding them. 2. Thickening of the coats of the vessels. 3. Some sclerosis of the antero-lateral columns. 4. Sparingly scattered points of colloid substance. 5. Many of the nerve-cells contained an increased number of pigment granules. 6. The central canal in the cervical region was curiously and greatly extended in breadth.

J. Lockhart Clarke.
W. B. Kesteven.

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2. *Osseous deposit in the arachnoid.*

By William Potts.

The specimen was removed from a lady, æt. 44, who had for several years been afflicted with delusions principally of a religious kind, and had also for a longer period been under the impression that her husband was in the habit of administering poison to her in small and repeated doses. About three or four years ago she became so troublesome and excited that she had to be confined in an asylum for a few weeks; but subsequently was removed by her friends and kept at her own home, where from that time she could scarcely ever be prevailed upon to leave her bed, although to

all appearance in fair health. Her religious delusions, however, continued.

For some weeks before her death she had refused her usual food, and had been seen occasionally by a medical practitioner for the last fortnight. When I saw her she was comatose, and died two or three hours after.

Post-mortem examination.—The body was examined about twenty hours after death. The body was stout and well nourished, with a very considerable thickness of fat under the skin.

Conformation of the cranium natural.

Upon opening it, and slitting up the membranes, there was attached to the arachnoid lining the dura mater, and on each side of the longitudinal sinus, but not dipping down with the falx, some thin laminæ of bone of irregular formation, and lying upon the convolutions of both hemispheres. On one side the bone deposit was about one inch in length, and about five eights in breadth; while that on the other side was about one third the size.

The pia mater was more vascular than natural, and the brain itself, though normal in size, was softened in structure. The lungs were highly congested, and the heart small, soft, and fatty.

Examined microscopically the bone deposit did not show the Haversian canals and lacunæ; still, I think the appearance of the specimen exhibited leaves little doubt of its true nature.

November 4th, 1873.

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3. *Ulnar nerve, showing the effects of division fourteen years before death.*

By Henry Trentham Butlin.

D. D—, æt. 32, was admitted into St. Bartholomew's Hospital, in June, 1873, with a broken back, of which he died three or four days after admission. There was noticed on his left forearm, three or four inches above the wrist, a long oblique scar, apparently the remains of a tolerably deep and severe wound. The ring and

DESCRIPTION OF PLATE I.

Figs. 1, 2, 3, and 4 illustrate Mr. Butlin's case of Division of the Ulnar Nerve Fourteen Years before Death. (Page 4.) From drawings by himself.

FIG. 1. Section of nerve above, fig. 2 of nerve below, seat of injury. Under 4-inch objective.

3 and 4. Sections of two fibres, one above, one below seat of injury. Under $\frac{1}{5}$th objective.

Fig. 5 illustrates Dr. Lockhart Clarke's case of Sclerosis of the Spinal Cord. (Page 16.) From a drawing by Dr. W. R. Gowers. × 275.

Fig. 1.

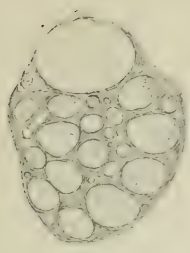


Fig. 2.

Fig. 3.

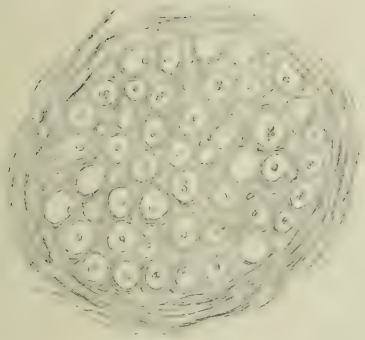


Fig. 4.

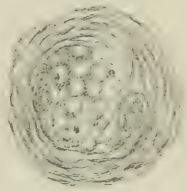
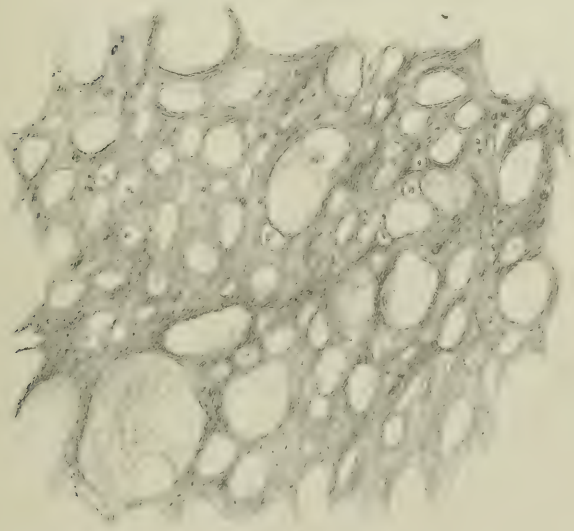


Fig. 5.



little fingers were exceedingly contracted, the little finger especially drawn in towards the palm. Neither of them could be at all straightened; the skin covering them was tense and glazed. The muscles of the ball of the little finger were atrophied to an extreme degree and contracted. The interossei and abductor indicis, the adductor pollicis, and the inner head of the flexor brevis pollicis were in the same condition. But so far as could be ascertained by careful examination there was no loss of sensation; feeling being as complete in the one hand as in the other.

The history which he gave of this, for he was in complete possession of his faculties until shortly before his death, was as follows:— That fourteen years previously his forearm was wounded, and he was in the hospital for fourteen weeks. At the time of admission, and for some time afterwards, the hand was "numb" on the inside. He regained feeling in it before he went out; the fingers became drawn down afterwards.

The parts exhibited were the structures lying beneath the scar, and for a short distance above and below it. The ulnar nerve had been completely divided about three and a half inches above the wrist; the upper portion was firmly united to the anterior surface of the tendon of the flexor carpi ulnaris; the lower portion was united to the same tendon, but to its posterior and external aspect. No communication whatsoever could be discovered between the extremities of the divided nerve, which were not only far apart but were also on a totally different plane. The upper portion showed very little atrophy even when examined with the microscope. About three fourths of an inch above its point of union with the tendon was a large bulbous swelling, similar to the swelling found at or about the ends of nerves in stumps. The lower portion of the nerve was exceedingly atrophied. Sections examined microscopically showed that it was composed almost wholly of connective tissue, but here and there could be seen small points which had deeply coloured with carmine, and which resembled the axes cylinders of nerves. (Plate I, figs. 1, 2, 3, 4.)

Even allowing these to have been axes cylinders, it is not easy to explain the perfect sensation enjoyed by the part generally supplied by the ulnar nerve. It is probable that in this case, if any value is to be attached to the history, sensation had been conveyed by the ordinary channel; that it had been lost after the accident, but had been regained within a comparatively short space of time. As so

much, however, depends upon the authenticity of the history, it would be entering upon a useless discussion were we to attempt to explain what may possibly be due to a totally different cause.

November 18*th*, 1873.

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4. *Case of reflex paralysis, supervening about the seventh month of pregnancy in a primipara.*

By Joseph Fayrer, M.D., for Joseph Ewart, M.D.

I saw a young wife, æt. 22, on the 23rd of December, 1872, complaining of weakness in the lower extremities. She had been married about seven or eight weeks. Prior to marriage she had menstruated with great regularity. She had passed over the last catamenial period a day or two before her marriage; since then she had not menstruated. On her way out to India she suffered from morning nausea and sickness. When first seen, the symptoms consisted mainly of weakness in the legs below the knees. For this a bitter tonic was prescribed, and the bowels regulated by a vegetable aperient.

24th.—The weakness was now so great that she could not stand, although she had the power of raising the legs and of moving the toes at will. There was numbness of the ends of the toes; there had been also some pain in both legs, but this was not extreme; it was increased by movement. There was much nausea and complete anorexia. The numbness and loss of power were greater in the right leg. The power of the sphincters was unimpaired. The bowels had acted well. The urine was copious, clear, and free from albumen. There was no expression of anxiety. All the organs seemed healthy.

25th.—The loss of sensation increased in both feet and toes, but more so in the right side; and it was now found that there was complete loss of power on motion in the right arm without impairment of sensation.

On the 26th she was completely paraplegic, with complete paralysis of motion of the right arm. The left hand was also partially deprived of motor power. The sphincters acted completely. On applying galvanism the muscles of the affected parts betrayed no evidence of responding to this stimulus.

On the 27th, 28th, 29th, 30th, and 31st the case seemed to undergo no change. The temperature remained stationary at 99·5°, and the pulse ranged between 110 to 120 per minute; and though both the direct and interrupted galvanic current was assiduously applied, there never was any proof that the muscles responded to this stimulus. Her countenance grew, however, more anxious.

On the 1st January, 1873, the pulse and temperature were unchanged. The paralytic symptoms were, if anything, more confirmed, whilst occasionally there was much difficulty of breathing and swallowing. She complained of there being phlegm in the throat, which she could not get up without great distress. On careful examination, no pain or tenderness could be found either in the region of the uterus or ovaries. The bowels were well cleared out by calomel and colocynth, assisted by a castor-oil, turpentine, and asafœtida enema.

On the 2nd, the temperature was 99·2°, pulse 120, respirations 24. The paralytic conditions much the same. There was more complaint about the dysphagia and dyspnœa. At 3 p.m. these conditions were marked indicating interference with the functions of the phrenics, intercostals, and the pneumogastric nerves. Besides, after this the paralysis of motion in both lower extremities and the right upper extremity was complete. At the ends of the corresponding fingers and toes sensation was more blunted. There was also marked weakness of the left hand and forearm. The bowels have been freely relieved. By palpation and concussion it was ascertained that no fœcal accumulation existed. The power of the sphincters continued uninfluenced.

The implication of the respiratory nerves added so much to the immediate gravity of the case that I now resolved, unless some tangible amelioration of the symptoms occurred, to take measures for the production of abortion. Superadded to the indications already mentioned, the breasts were enlarged, the discoloration around the nipples was well pronounced, and there was distinct enlargement of the womb, as ascertained by digital examination per vaginum. I had prescribed conium, aconite, and belladonna in

moderate doses, from the 28th December. In the evening, Dr. Charles saw her with me, and coincided with me as to the necessity of bringing on abortion should there be no early improvement.

On the 3rd there was some apparent amelioration of the respiration, but considerable dysphagia; the paralytic symptoms remained unchanged. She had taken plenty of liquid nourishment, although with great difficulty. At 8 a.m. I passed the uterine sound, protected from the os uteri to its handle with gutta-percha tubing, and passed a strong galvanic current through the uterus for upwards of a quarter of an hour. I then fixed a Pulvermacher's chain to the sound with one pole fixed to the instrument and the other to the spine, and left the whole fixed in position. Hot-water injections were also employed every hour for a quarter of an hour at a time. The sound and the chain had to be removed at 12 noon on account of a deep-seated burning pain referred to the region of the womb. Dr. Palmer, of the General Hospital, and Dr. Charles, the Professor of Midwifery, were present. The anodyne medicines and liquid nourishment were continued, and a free action of the bowels was maintained by purgatives aided by aperient and anti-spasmodic enemata.

On the 4th, finding that no signs of abortion were apparent, I introduced, at 9 a.m., a sponge tent into the canal of the cervix. I removed it at 6 p.m., and then found that the finger could be inserted into the canal without difficulty. Periodic uterine pains now came on.

On the 5th, at 11 a.m., the ovum was lying at the external os. I removed it with some clots of blood, and washed out the organ with a very weak tepid solution of carbolic acid and water. The whole of the discharges were kept and examined. She did not lose more than half a pound of blood. At 7.30 p.m. she seemed relieved. There was a slight return of power in the hands, and also some increase of sensation in the feet. There was, however, considerable insomnia, and this was obviated by a chloral injection into the rectum. *Pergat.*

During the 6th and 7th she did not complain much of her breathing and swallowing; and there seemed to be still further action of muscular power in the hands. The sensation in these and feet also improved, but the muscles of the lower extremities remained completely paralysed and quite inactive even to strong galvanic currents. She passed her fæces and urine

voluntarily. She took abundance of food. The temperature was 99·2°, and the discharges natural and free.

On the 8th the improvement seemed steady; but about 10 a.m. the dyspnœa and dysphagia reappeared, causing great distress, whilst the paralysis of motion both in the upper and lower extremities continued as bad as ever. *Pergat.*

On the 9th I learnt she had passed a very bad night. During the day there was great difficulty of breathing, apparently from partial paralysis of the phrenics, intercostals, and pneumogastrics. At 7 p.m. found her dying from asphyxia and apnœa.

At the *post-mortem*, held at 11 a.m. on the 10th, the body was found to be well nourished. The spinal cord was removed in its whole length and sliced at every quarter of an inch or so. But beyond a universally anæmic condition, no further change could be discerned by the naked eye. It was put up in chromic acid, according to Professor Beale's direction, and forwarded to Dr. Fayrer, C.S.I., for transmission to the Pathological Society for microscopical examination by any of the experts whom the Society may please to nominate.

The uterus was found about the size of the organ at the seventh month of utero-gestation with some contents consisting of broken up or breaking up blood clots, not more than half an ounce in all.

November 18*th*, 1873.

Report upon the microscopical examination of a spinal cord forwarded to the Pathological Society by Professor Ewart, of Calcutta. —In the *conus medullaris* the several structures were scarcely discernible by reason of their softness. In the posterior columns of this region there were observable, under a quarter-inch objective, a large number of very minute and more or less circular semi-transparent bodies, varying in size from the $\frac{1}{5000}$th to the $\frac{1}{1000}$th of an inch in diameter. These bodies had a clearly defined margin. They might be taken to be spots of miliary sclerosis, from which, however, they were distinguishable by their translucent and clearly amorphous characters. These *colloid* spots were embedded in the hypertrophied connective tissue and its corpuscles. They were distinguishable from the cut ends of nerve-tubes by a comparison with the latter structures in healthy parts of the cord.

In the *lumbar region* the same softened and degenerate condition was observed in the posterior columns. The posterior cornua were

small, and in some of the sections appeared reduced even to a few bundles of nerve-roots. The multipolar cells were atrophied and in a state of pigmentary degeneration. The central canal was in this part clotted with nucleated corpuscles and *débris* of epithelium, and these were so arranged as to give the appearance of a double canal.

In the *dorsal region* the right anterior horn of the grey substance was slightly smaller than the left. The multipolar cells were also fewer in number. Many of these did not take the carmine dye uniformly, showing incipient degeneration, which in many cells was further shown by varying degrees of pigmentation.

The same general characteristics were presented in the *cervical region*, with the addition at this point of numerous amyloid bodies, which were very much more abundant in the posterior than in the anterior columns. Ascending to the medulla oblongata it was found that the posterior pyramids and restiform bodies were crowded with corpora amylacea of different sizes. At the lower part of the medulla oblongata these bodies were very numerous in the anterior columns.

The central parts of the upper portion of the medulla oblongata were reduced to a soft and indistinguishable pulp.

Throughout the whole length of the cord, the posterior columns were markedly paler than usual, almost white, and their consistence softer than other parts, approaching in some spots to an almost pulpy state. There would seem to have been a certain degree of subacute myelitis.

J. Lockhart Clarke, M.D.
W. B. Kesteven, F.R.C.S.

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5. *Disease of spinal cord (unilateral), with paralytic symptoms (bilateral).*

By W. B. Kesteven.

M—, æt. 45, a single woman, suffering from loss of power of the hands, which were somewhat wasted, and the fingers contracted on to the palms of the hands. There was also considerable

loss of power of the lower extremities. She rose with difficulty when seated, and walked with hesitation and fear of falling. The surface of both upper and lower limbs was hyperæsthetic. Severe pains were felt from elbows and knees, downwards towards the feet and hands.

These conditions existed equally on both sides of the body, and had been gradually coming on during the last seven years of the patient's life. Habits of intemperance had prevailed with her.

Throughout the whole length of the spinal cord the grey matter of the left side was smaller than that on the right. The difference was more strikingly shown in the dorsal region, in the middle of

Woodcut 1.

which, for about the extent of an inch, the left anterior horn was found to have become so much atrophied as to present little more than a narrow curved strand of grey substance, having entirely lost its normal shape (Woodcut 1). The multipolar cells were small and granular. *November* 18*th*, 1873.

6. *Absence of posterior vesicular columns of the spinal cord.*

By Mr. W. B. Kesteven.

This was found for about the extent of half an inch in the lower part of the dorsal region of the cord, in a case of puerperal mania (Woodcut 2). I had attended this patient in three separate

Woodcut 2.

attacks of puerperal mania; in the last of which she died from exhaustion. She had never manifested any symptoms that could in any way be specially referred to the spinal cord. That such, doubtless, might have been observed had the lesion been more extensive, seeing the connection of the cells of the vesicular column with the posterior column and nerve roots. Possibly under existing circumstances the commissural fibres were sufficient to supply the deficiency in the cells on one side of the cord.

It is a question how far this lesion may be related to repeated spinal erethism of pregnancy occurring in a patient whose nervous centres were always in a more or less unstable condition. She was a woman of an irritable temper and violent disposition. She had borne eight children, and five of her deliveries had been followed

by puerperal mania. In these repeated attacks the brain had undergone a grave degeneration, as was manifest from the abundance of spots of miliary sclerosis. These were crowded together to the extent of between three or four thousand to the inch. In diameter the spots varied from the three hundredth to the eight hundredth of an inch. *November 18th*, 1873.

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7. *Case of a boy, æt.* 13, *who lay for nine days after a fall, in which one of the prongs of a farming fork had passed through the brain.*

By W. B. Kesteven, for F. H. Harris, Mildenhall, Suffolk.

H. P—, æt. 13, fell from the top of a load of straw holding a fork with the tines upwards in his hand; one of the tines entering the head an inch behind, and on a line with the lobe of the left ear, passing upwards and slightly backwards almost its entire length. It was withdrawn by a fellow workman with some difficulty, as the point was bent upon itself to the extent of two inches. There was no open wound, swelling, or softening to be found except that caused by the entrance of the fork. Before he was seen (which was about three quarters of an hour after the accident) he had lost a quantity of blood, and had been violently sick several times. When seen, he was lying on his right side with his legs drawn up; pale, cold, almost pulseless. He was unconscious, but could be roused enough to mumble, but not to answer questions. Pupils very slightly dilated. On looking at the wound about a teaspoonful of brain substance was protruding, which had been expelled during sickness. He was kept quiet, in a dark room, with cold water applied to the head, and directed only to take milk and water.

September 4th, 7 a.m.—No discharge from wound, which looks almost healed, had been moaning and very restless all night, and had some difficulty in swallowing. No urine passed; bowels not acted; pulse 90.

5th, 8 a.m.—Slept little; very restless since last visit. This morning quite unconscious, constantly raving and turning about. Has been slightly convulsed during the night; passes water involuntarily; bowels not acted. Being at a distance of five miles, was brought by an easy conveyance to the Cottage Hospital, Mildenhall. Head forcibly drawn back; muscles of the neck, especially the sterno-mastoid, rigid. Able to swallow, and that with great difficulty, only a few drops of any liquid.

6th, 10 a.m.—Slight opisthotonos; very restless during the night; noisy. Temperature normal; pulse 108, small and compressible. Much wasted since the injury. Had small doses of solution of morphia. He would, when waking up, attempt to answer questions put to him, and could swallow with greater ease small quantities of milk and eggs; still passes water involuntarily. Ordered injections of milk and eggs with brandy every two hours. The wound to be poulticed.

7th.—Slight occasional opisthotonos during the night. Not so restless, swallows a little food consisting of biscuit and milk. During the day became partially conscious; recognising his father, said he was hungry. Opened his mouth for food when told to do so.

8th.—Intervals of partial consciousness during the day; stiffness of neck gone; no opisthotonos; bowels had acted (from the enemas).

9th.—Slightly sensible; pupils slightly dilated; swallows small quantities easily; not so restless.

10th.—Seems greatly exhausted: quieter; pulse quick and very small. Again some difficulty in swallowing, which increased during the day; lies on his back; moves very little; eyeballs sunk; face much wasted; parietes of the abdomen falling back on the spine.

11th.—Continues to get weaker. Died on the morning of the 12th.

Post-mortem thirty hours after death.—Body much emaciated; eyes sunk in head; pupils dilated, but not more than half the size of the iris. External wound covered by a scab, but presenting no appearance of inflammation. A long probe pushed into the wound passed upwards, slightly backwards and inwards, till it impinged against what was afterwards found to be the posterior superior angle of the right parietal bone. On dissecting up the wound the posterior part of the mastoid process was found broken down.

On removing the skull cap all the vessels were found much

gorged with dark blood, and a blood clot three inches by two inches in diameter between the dura mater and the bone. When pushed in the wound the probe protruded through the centre of it. The clot was so firmly adherent to the dura mater that it could only be separated piecemeal by scraping with a scalpel.

On removing the brain a fracture of the occipital bone was seen at the most concave part of the left inferior fossæ. A loose piece of bone projecting outwards from the brain.

Treatment and remarks.—When first seen he was ordered to be kept as quiet as possible in a darkened room, the hair to be cut off, and cold applications to the head, with only milk and water to take, and this not to be pressed upon him. In a few hours he became noisy and very restless, with a quickened pulse. He then had given him small doses of nitrate of potash and tinct. digitalis. The cold to be constantly applied in hopes of limiting the amount of blood effusion and inflammation. This medicine was omitted after the fourth day, and when signs of exhaustion began to appear he had injections of brandy, eggs, milk, and beef tea every two hours, till he could swallow a little. For a little more than twenty-four hours he swallowed moderately well, and became at times partially conscious, recognised his father, opened his mouth for food, and said "Nice" when asked if he liked it.

This improvement raised hopes of his eventual recovery, but exhaustion steadily progressed, notwithstanding the injections of nourishment which were again had recourse to.

He never had any strabismus, nor distinct trismus; nor were the pupils ever much dilated.

At the fourth and fifth days he had given him some small doses of solution of morphia, to allay the extreme restlessness and rigidity of the muscles, which at times were almost tetanic. The morphia had the desired effect. *November* 18*th*, 1873.

8. *Sclerosis of the spinal cord.*

By J. Lockhart Clarke, M.D.

I propose to exhibit portions of a spinal cord, and preparations made from them, as good specimens of a morbid change of structure which has recently been termed "sclerosis." Cruveilhier and Carswell about the same time had already given a rough description of the naked-eye appearances of this lesion. Nine years back, in 1864, I described its chief anatomical characters under the name of "disintegration of the nerve-fibres, with hypertrophy of connective tissue."* In transverse sections of the cord the cut ends of the nerve-fibres presented the appearance of round or oval and perfectly pellucid areas (Plate I, fig. 5), sometimes crossed by remnants of their white substance, and sometimes perfectly vacant; in some places sharply circumscribed and isolated by the surrounding hypertrophied tissue, in other places coalescing to form a a sponge-like structure with irregular or uneven outlines. Charcot, Vulpian, Frommann, and Rindfleisch, have since given a fuller description of this morbid change under the name of *sclerosis.* They found the walls of the arterioles and smaller vessels crowded and thickened by small round cells; the cells of the connective tissue or neuroglia were enlarged, and their processes were dilated and bore nuclei. These changes belong to the early stages. After a time the network of connective tissue becomes filled with nuclei. Around the disintegrated nerve-fibres numerous fatty globules may be observed. Charcot has shown that in the centre of the sclerosed area both cells and trabeculæ have disappeared, and are replaced by long delicate fibrillæ, frequently interlacing.

The vessels of the sclerosed areas are considerably altered in structure. Their walls are often thickened, and their nuclei are increased in number, particularly in the centre of the sclerosis; their perivascular sheaths are replaced by fibrillæ like those which are found in the reticulum or network of the neuroglia, and their

* 'British and Foreign Medico-Chirurgical Review,' April, 1864, vol. xxxiii.

calibre is consequently lessened. In the midst of the sclerosed mass globules of fatty substance are commonly found.

Charcot is of opinion that the disintegration of the nerve-fibres results from the pressure exerted on them by the surrounding and hypertrophied connective tissue, but I consider it not improbable that this disintegration is the consequence of impaired nutrition arising from previous disease of the blood-vessels. The case from which the specimens I now exhibit were made was evidently one of subacute inflammation, in which the blood-vessels were seriously diseased. It was a case of what M. Duchenne (de Boulogne) has recently described and distinguished as subacute general spinal paralysis. *December 2nd*, 1873.

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9. *Psammoma of the cerebral dura mater.*

By W. Cayley, M.D.

Louisa E—, æt. 57, a widow, was admitted into the Middlesex Hospital on October 23rd, 1873. She had been subject to bronchitis and epistaxis. In August she had been a patient in the surgical wards in consequence of a severe attack of the latter affection. On her recovery she was sent to the Convalescent Hospital at Walton. While there, on September 16th, she had an attack of hemiplegia affecting the left side. This was accompanied by severe pain on the right side of the head, bronchitis supervened, and she was sent back to the Middlesex Hospital.

On admission she was almost moribund with the symptoms of general bronchitis and pneumonia of the left base. There was loss of power in the left arm, with some paralysis of the same side of the face and deviation of the tongue to the left. The sensation in the paralysed arm was much impaired. The state of her vision was not noticed. She died the following day.

On *post-mortem* examination an apoplectic clot the size of a pea,

surrounded by broken-down nerve-tissue, was found in the centre of the right corpus striatum.

Attached to the dura mater, close to the outer side of the right optic foramen, and projecting upwards into the cranial cavity, was a tumour the size of a bean, slightly lobulated, of a white colour, and with a gritty section. The right optic nerve was displaced by it, and was only about half the thickness of the left one. The tumour had hollowed out a fossa in the right anterior cerebral lobe, corresponding to the root of the olfactory bulb.

On microscopical examination the tumour presented tracts of fibrous tissue channeled by wide vascular canals and large numbers of bodies consisting of concentric layers of fibres with calcified centres. I was unable to make out any definite relation of these bodies to the vascular channels.

The lungs were emphysematous, and presented the characters of bronchitis. There was pneumonic consolidation of the right lower lobe.

The heart was greatly hypertrophied, the mitral valve was thickened, and the muscular walls loaded with fat.

The condition of the patient was such as to preclude any very minute examination of the symptoms caused by the minor lesion, but the tumour does not appear to have caused any paralysis, the hemiplegia being clearly due to the hæmorrhage into the corpus striatum. *December* 16*th*, 1873.

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10. *Melanotic sarcoma in the medulla oblongata secondary to a similar growth situated probably in a lymphatic gland.*

By Rickman John Godlee.

The first specimen shown is perhaps the most interesting of a series of melanotic tumours taken from a patient, C. P—, who was in University College Hospital during the spring of last year under the care of Mr. Marshall. It presents, as I think, one or two points worthy of the consideration of the Society, not only

because the seats of the present specimen and the original tumour were uncommon and the manner of the patient's death peculiar, but also because some of the secondary deposits gave an unusually good opportunity for studying the earliest methods of development of this disease.

The patient was a healthy labourer from Hertfordshire, fifty-eight years of age, with light yellow hair which was becoming grizzled, blue eyes, and a remarkably clear pink complexion. These points suggest a parallel to the well-known fact in veterinary surgery—that melanosis, which is not at all uncommon amongst horses, more frequently attacks white animals than those of any other colour.

There is nothing in his previous history that bears upon the case, except, perhaps, that twelve months before admission he had a sore on the front of the leg, which was slow in healing, but he noticed no glandular enlargement at the time, and it was not until four months afterwards that he first perceived a swelling of the size of a pea in the right groin. This increased slowly up to the time of admission, but never caused him any pain or inconvenience. He was well and hearty, and the only other symptom that could be discovered after careful inquiry was a little numbness and slight loss of power in the left arm, for which it was impossible to account.

When he was first seen there was a large round tumour in the right Scarpa's triangle, reaching up to within half an inch of Poupart's ligament. It was freely movable, but there extended upwards from its highest part a narrow deep projection. It was completely free from pain and tenderness, and there was, of course, no bruit, fluctuation, or impulse. Another small tumour, which eventually turned out to be of the same nature as the larger one, was found in the skin of the opposite thigh. The lymphatic glands above the tumour were distinctly larger than natural, but as there appeared to be a similar mass in the other groin no great attention was paid to them, and Mr. Marshall proceeded to remove the growth. This was done without difficulty, though the tumour extended much more deeply than had been anticipated. It rested on the fascia lata, and, in fact, was adherent to it by one or two black spots or streaks; while the prolongation upwards turned out to be a lymphatic gland in close connection with the larger mass, of a dark grey colour, and obviously affected by the pigment.

The tumour itself was of about the size of an orange, and

was closely connected with the gland above it; in fact, from its position it seemed almost certain that it was originally itself one of the inguinal glands, though no lymphatic structure could be detected under the microscope. Its surface bulged very much when it was divided, and showed a glistening dark brown colour passing in parts almost to black, and having one circular patch, that was almost white, in the centre. It was traversed throughout by fibrous bands, and yielded on scraping large multinucleated cells, some pigmented and some not.

Nothing occurred in the progress of the case beyond two slight attacks of vomiting until the twelfth day after the operation, when the patient drank two medicine-bottlesfull of wine which he had smuggled into the hospital, and in consequence became decidedly intoxicated. In this condition he remained for the rest of the day, and from it he never recovered, but passed into a semicomatose state, answering questions, however, when roused until the morning of the fourteenth day (*i. e.* about forty hours in all), when he died, after having been completely unconscious for three hours with rapid respiration and weak pulse, but without paralysis or convulsion. During the whole of this time he had to be tied in bed, as he showed a great tendency to roll out.

I will not dwell long on the various organs which were the seats of the secondary deposits that were found in great numbers at the *post-mortem* examination. They were in no respects different from those which are generally described; but I must express my regret that the spinal cord was not looked at, and that none of the bones were sawn through. I was not aware at the time of the frequency with which the disease shows itself in these situations.

First, then, as to the brain. There were two tumours of the size of nuts, and about six of much smaller size in the grey matter of the cerebrum. All showed distinctly on the surface, the larger as black masses, the smaller as faint grey dots, and all were above the level of the centrum ovale majus.

The tumour in the medulla was remarkably soft, almost central in position, but extending rather further to the right than the left side, and reaching from half way down the medulla to the lower border of the pons. No sign of a recent hæmorrhage could anywhere be seen, and thus, though it is impossible not to suspect that the growth had something to do with the man's death, it is not easy to explain the symptoms that set in after the fit of drunkenness. It

seems strange that so large a mass could have existed in this important situation without giving rise to any symptoms whatever unless the numbness and loss of power in the left arm are to be attributed to it.

The *heart* contained two tumours in the centre of two columnæ carneæ; and throughout the *lungs*, but principally on the surface of the lower and middle lobes, were numerous melanotic masses, which shelled out of the pulmonary tissue with great readiness.

The intestines, but principally the jejunum, showed several of the tumours, which are described by all who have written on the subject, the younger ones being minute flat black spots covered by mucous membrane, and the older ones cup-shaped ulcers, reaching sometimes a larger size than that of a shilling, with a black or yellowish base.

Some minute growths were found in the supra-renal capsules, but none in kidneys, liver, or bladder.

The glands in the right groin and by the side of the internal iliac artery were much swollen and of a patchy grey colour, and it could not be doubted from the naked-eye appearance that they were in some way affected by the melanosis. Those on the left side were normal, but there was a hard tumour under the peritoneum, which had during life been mistaken for an enlarged gland on this side. Besides these, two or three smaller ones were found under the peritoneum and in the subcutaneous fat.

But it is principally to some of the microscopical appearances that I wish to direct the attention of the Society. Nothing need be said about the subcutaneous growths (which were ordinary round and spindle-celled sarcomata), except that the edge of a fully developed tumour is sharply defined, there being, in fact, a pretty distinct layer of fibrous tissue between the mass and the surrounding fat.

On examining the dark grey lymphatic gland removed at the operation I was at first disappointed to find that a scraping showed nothing but lymph-corpuscles, but on looking more closely there were to be seen a few, but very few, delicate oat-shaped cells, with distinct nuclei and nucleoli, and inside the cell, but outside the nucleus, more or less of the characteristic amber-coloured pigment. On making sections subsequently of the less distinctly black glands by the side of the external iliac artery it was found that these cells (which varied considerably in size and shape) were the only ones con-

taining pigment, and were arranged in definite rows along the lines of the fibrous trabeculæ (Pl. II, fig. 1), occupying, in fact, the position of what is known as the lymph-channel or lymph-sinus.

Whether or not the appearance found in the brain throws any light upon this I am not prepared to say. A section through one of the smallest of the tumours in the grey matter is an object of very great beauty. Under a lower power (fig. 2) similar spindle-shaped and round cells to those seen in the original tumour and in the glands, some containing pigment and some not, are seen running accurately along the lines of the small vessels; and under a higher power (fig. 3) if a vessel has been cut across, or if one of the larger ones happens to have been divided longitudinally, it is seen that, at least in many cases, the bore is patent, and the new growth is deposited simply in the perivascular spaces, or, at all events, in a layer completely surrounding the vessel without at first encroaching upon it. I say *at first*, because undoubtedly in most cases where a vessel has been divided either longitudinally or transversely the whole of its calibre appears to be obstructed, but I conceive that a few instances in which it remains patent go far to prove that this is the primary condition in all.

If we imagine, as seems most likely, that these secondary deposits arise as the result of emboli in the first instance, how are we to account for the fact that the vessels are not plugged and that no hæmorrhage appears to have taken place around them? But, on the other hand, it is surely impossible to suppose that a deposit of pigment has originally taken place in the epithelium of the capillaries, and that a consequent multiplication of epithelial cells has given rise to the spindle cells, of which the tumour consists.

In the heart, the growth at the outer parts of one of the tumours was obviously deposited in the shape of the muscular bundles, but these fasciculi were distinctly larger than any normal ones in their neighbourhood. Each bundle, when cut across or divided longitudinally, consists of a mass of the usual round or spindle cells. In an older part no definite arrangement is seen. The idea suggests itself that they may originate in the cells of the sarcolemma, which multiply and encroach upon the muscular bundles, so as at last to occupy their positions altogether.

But perhaps the most strange appearance of all is seen near the edge of one of the larger tumours in the lungs. Here the lines of the walls of the vesicles, infiltrated, indeed, with large round but chiefly

DESCRIPTION OF PLATE II.

Plate II illustrates Mr. Godlee's case of Melanotic Sarcoma in the Medulla Oblongata, secondary to a similar growth probably situated in a Lymphatic Gland. (Page 18.) From drawings by himself.

FIG. 1. Melanosis affecting an inguinal gland, showing how the melanotic cells, which are round and spindle-shaped, occupy the lymph-sinus, *i.e.* are deposited along the fibrous trabeculæ. × 120 diameters.

2. Melanosis of grey matter of cerebrum. Showing how the melanotic cells are deposited accurately along the lines of the small vessels. × 120 diameters.

3. Melanosis of grey matter of cerebrum. Showing how the round and spindle cells containing pigment are deposited in the perivascular sheath of a small vessel without occluding its bore. × 500 diameters.

Fig. 1.

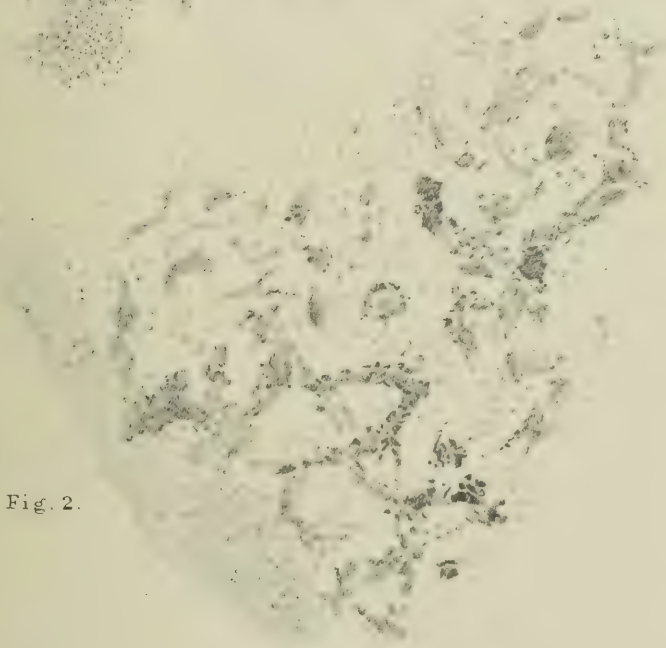

Fig. 2.

Fig. 3.

H Ford.

Mintern Bros imp

colourless cells, stand out sharply in a mass of darkly pigmented ones which occupy the dilated vesicles themselves, and thus give at first sight under a low power something the appearance of a theoretical cancer of which the stroma is white and the masses of cells black, for scarcely any fibres exist amongst the melanotic cells in this situation.

This appearance is by itself not easy to explain, but I have in my possession some other preparations of melanosis of the lung which seem to throw light on the subject. In these each mass consists of a patch of pulmonary apoplexy, but among the red corpuscles filling the vesicles are cells of various shape and in very varying numbers containing pigment, and closely resembling those seen in the other tumours described above.

In conclusion I would say that these pigmented tumours, when they fall in our way, are worthy of very careful observation. We are able to detect the first appearance of a new growth in any part, and it is evidently these very minute ones which afford the best opportunity of studying the method of development of this particular disease, and probably of throwing light on the origin and progress of sarcomata in general. *May 5th*, 1874.

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11. *Disability of the hand resulting from injury and disease of the ulnar nerve.* (Illustrated by photographs.)

By T. W. Nunn.

Case 1.—The injury to the ulnar nerve occurred in August, 1861, when the patient was 6½ years old. The observations as to the influence on the temperature of the hand were reported to the Society in February, 1866, and published in vol. xvii, p. 6, of the Society's Transactions. The nerve had been severed on the distal side of the pisiform bone (Plate III, figs. 1 and 2).

Case 2.—Injury to the ulnar nerve on the proximal side of the

pisiform bone. The nerve had been severed about one inch above the wrist (figs. 3 and 4).

Case 3.—Thickening (syphilitic?) of the ulnar nerve immediately above the internal condyle. Photograph not engraved, as the peculiarities are much less obvious.

In all these cases the nutrition of the interosseous muscles was considerably interfered with, thus the interosseous spaces were distinctly marked by the atrophy of the interosseous muscles. The disability essentially consisted in a want of power to extend the fingers, the hand assuming a claw-like appearance.

M. Duchenne (de Boulogne) has explained this position of the fingers by demonstrating that the interosseous muscles were assistant extensors by virtue of the insertion of part of their tendons into the tendons of the extensor communis digitorum.

In Cases 2 and 3, as in Case 1, there was considerable diminution in the temperature of the hand, a circumstance easily to be understood when it is remembered that the ulnar nerve "animates" all the interossei muscles, the two inner lumbricales, and as well all the muscles of the little finger and a part of those of the thumb.

May 19th, 1874.

DESCRIPTION OF PLATE III.

Plate III illustrates Mr. Nunn's cases of Disability of the Hand resulting from Injury and Disease of the Ulnar Nerve. (Page 23.) From photographs.

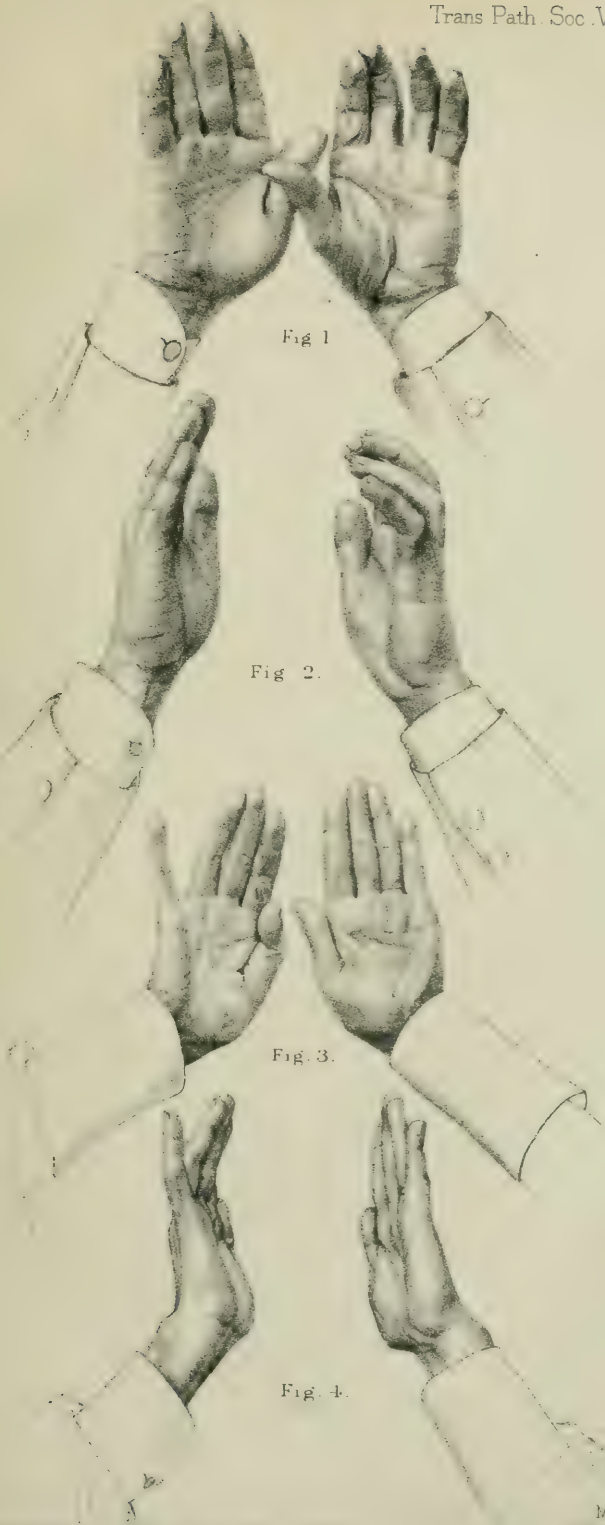

Fig 1

Fig 2.

Fig. 3.

Fig. 4.

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II.—DISEASES, ETC., OF THE ORGANS OF RESPIRATION.

1. *Aneurysm of a small branch of the pulmonary artery, causing fatal hæmoptysis.*

By W. Cayley, M.D., for A. Silver, M.D.

The patient, a male, æt. 32, a labourer, was admitted into Charing Cross Hospital, under the care of Dr. Silver, on October 9th. He stated that about six months ago he began to spit blood, having been troubled with cough and spitting some time before. After that he improved, but just when he was about to return to his work he had another attack of hæmoptysis, since which time he has been permanently invalided. When admitted he had all the signs of phthisis. On October 15th he had another very severe hæmoptysis, and his temperature went up to 102°, whilst his dyspnœa became worse. Again he rallied somewhat, but on the morning of the 20th he suddenly brought up a large quantity of blood, and died. Having had signs of a long-standing cavity in the left apex, and having regard to the nature of the hæmorrhage, which always came in great gushes, it was judged probable that there was some aneurysm of the pulmonary artery in the walls of the cavity, and on tracing the vessel to the margin of the cavity such a one was discovered, about the size of a pea, and in close proximity to several large vessels which had been obliterated. From it, in all probability, had come the fatal hæmorrhage. *October* 21*st*, 1873.

2. *Tertiary syphilis; diabetes; necrosed bone in the larynx; clonic convulsions of the right side; laryngeal stridor; death.*

By T. S. Dowse, M.D.

M. F—, æt. 38. Admitted into the Central London Sick Asylum on the 4th of April, 1873. Died 12th September, 1873.

This patient until about two years ago enjoyed average health. When admitted she was extremely thin, and there was deformity of the right hand arising from necrosis and loss of bone from the digital phalanges. There were some open ulcers about the right arm as well as cicatrices from previous ulceration. She denied ever having had syphilis, but from inferential evidence it was clear enough.

About six months previous to her admission there was a discharge of yellow offensive matter from the posterior nares, but no diseased bone had been known to make its escape.

At times the breathing was so urgent and so severe that suffocation appeared to be imminent, and the laryngeal narrowing which occasioned this was apparently of a spasmodic nature. For this reason I deferred upon more than one occasion the performance of tracheotomy. The voice rarely rose above a loud whisper, and was accompanied by a nasal twang. Laryngoscopic examination revealed no ulceration of mucous membrane, but there was a decided want of motility in the vocal cords to close the glottis, and from the peculiar noise accompanying respiration I doubt if the glottis were ever closed at all.

From other signs and symptoms I was led to think she was suffering from diabetes, and upon examining the urine, which was passed in considerable but varying quantities, it was found to be loaded with sugar and of high specific gravity.

On the 21st of July she was for the first time seized with convulsions of the right arm and leg of a quasi-tonic nature. They usually commenced in the same way by a sense of formication at the ends of the fingers, which passed up the limb, and thence went down the leg to the foot.

The eyes and mouth were drawn to the right, and at times the

whole of the body would participate in the spasmodic movements with slight opisthotonos. The convulsions generally terminated in spastic tonic flexion of the arm and rigid extension of the leg. There was no loss of consciousness, but voluntary power was in abeyance.

These seizures continued for ten or twelve days with intermissions varying from ten minutes to two hours. They were always worse at night, and at times came on during sleep.

From my notes I find that since these seizures have come on they appear to have taken the place of the laryngeal stridor and of the urgent attacks of dyspnœa from which she generally suffered, which at times led me to suppose them to be of a reflex nature.

The right lung was consolidated throughout, and the breathing at the apex was cavernous. The intellect was in no way affected, but her speech was at times faulty, apparently from want of co-ordinating motor power in the lingual muscles.

During the night of the 12th of September, she was seized suddenly with urgent dyspnœa, and died almost instantaneously from apnœa.

Post-mortem examination, made twenty-four hours after death.—Body emaciated. Cadaveric rigidity persistent in the upper extremities.

Brain.—Upon removing the calvarium the dura mater was found healthy, but upon cutting through it at the point of the torcular Herophili there was considerable escape of dark venous blood from engorgement of the sinuses. At the base of the brain the arteries, motor tract, and central ganglia, were all seen to be healthy, as well as the cerebral substance. The ventricles were free from fluid, and nothing abnormal could be discovered in the parts forming the floor of the fourth ventricle. It, however, presented a patch of hypervascularity over the locus ceruleus.

Heart.—Upon opening the pericardium the heart was seen to be small, its structure pale, but its valves were healthy.

Lungs.—The left lung was quite healthy; the right was consolidated from apex to base, and completely adherent through the pleura to the chest wall; its substance was riddled with grey granular material, and at the apex was a large cavity.

Liver.—The liver was normal in structure, but there was marked dissimilarity in the size and condition of the two kidneys, the right one being very small, and weighing only an ounce and a half.

The left one was altogether as large, and its cortical substance enormously hypertrophied. It weighed nine ounces.

Larynx.—When the larynx was removed and the thyroid cartilage cut through anteriorly there was found in the left portion of the pouch formed by the crico-arytenoid muscles a piece of necrosed bone firmly embedded in their structure. And lying loose in the same region was another irregular piece of necrosed bone covered with slimy Schneiderian mucus, and giving forth the odour so characteristic of diseased bone from the nasal passages.

There appears to me to be two points of unusual interest in this case:

1. With regard to the location of the foreign body.
2. With regard to the body itself. *October 21st*, 1874.

Report of Committee on Dr. Dowse's specimen.—The specimen referred to us consists of a larynx and trachea, with tongue attached.

At the posterior part of the internal surface of the larynx, near the median line and at the level of the cricoid cartilage, a loose piece of necrosed bone half an inch in transverse and three quarters of an inch in vertical measurement is found partially embedded in the tissues. The cartilage itself is entirely absent at this point, but adjoining the loose piece of bone on the left side is another piece, which, also necrosed, is still firmly adherent to the cricoid cartilage. The cricoid cartilage is ossified to the extent of a quarter of an inch on either side of the portion referred to. The thyroid cartilage yields well-marked signs of ossification at its anterior portions.

From our observations of the above facts we conclude that the case is one of ossification of the body of the cricoid cartilage, which has subsequently necrosed and has become detached.

George Harley, M.D.
R. Douglas Powell, M.D.

3. *Perforation of trachea by an enlarged and caseous mediastinal gland.*

By Sidney Coupland, M.B.

This specimen illustrates the somewhat rare event of the termination of a scrofulous gland by bursting into the trachea. The subject from whom it was taken was a fair-haired, blue-eyed, delicate-looking boy, four years of age, remarkably precocious and intelligent. He was the elder of two children, the other being a well-nourished healthy child, two years his junior. His parents were young, both somewhat delicate, especially the father, who had enlarged cervical glands and was subject to sore throat. There was no history of phthisical taint on either side.

Shortly after birth the child was said to be "asthmatical," but he suffered no illness of importance until November, 1872, when he had "low fever," lasting seven weeks. After that he was taken to Brompton Hospital, where he attended as an out-patient for some time. In the summer of 1873 he took cold and began to suffer from alarming attacks of shortness of breath. In August he came under the care of Dr. John Murray, who attributed his symptoms to laryngeal growth, but he could not make a laryngoscopic examination. He was admitted into the Middlesex Hospital at the end of September, under Dr. Murray, and he subsequently came under the care of Dr. Thompson. He was then suffering from general bronchitis, complicated by prolonged and severe spasmodic attacks of dyspnœa, with hoarse ringing cough. The paroxysms of dyspnœa were generally successfully met by hot applications to the throat, cold affusion to the face, and ammonia and ether internally. On November 18th he was discharged, apparently convalescent.

He was readmitted on November 27th with a fresh attack of bronchitis. Slight enlargement of the cervical glands was noted. He continued to improve, without any return of the dyspnœa, until December 13th, when paroxysmal attacks of dyspnœa again set in; on the following night he had an attack of dyspnœa lasting for three or four hours, obliging him to sit up in bed, with

his head thrown back, and marked by considerable lividity of lips. He was relieved eventually by warm applications to the larynx, and draughts containing ether and bromide of potassium. In the early morning of the 18th another very severe paroxysm set in, and tracheotomy was performed by Mr. Morris. The introduction of the tube increased his discomfort, but after a short time his breathing became quieter; in a few hours, however, the tube was removed, as its presence in the trachea seemed again to excite spasm. Similar distress and dyspnœa were excited when attempts were made to keep the wound open by means of a curved wire. The child continued to progress favorably, the wound not being allowed to close, until December 27th, when he was seized with a severe paroxysm of dyspnœa, leaning forward in the bed, supported by his hands, his face livid and bathed in perspiration, uttering a sharp cry with each inspiration. The subsidence of this attack was speedily followed by another, in which he died.*

The following were the conditions found on *post-mortem* examination, eighteen hours after death :—There were some old adhesions between the liver and diaphragm. On raising the sternum a collection of enlarged and somewhat indurated glands existed in the anterior mediastinum, mostly over the root of the right lung, one of these glands breaking down into a cheesy mass. In the posterior mediastinum there was a chain of enlarged glands, varying in size from that of a pea to a hazel nut, and just above the right bronchus these glands had formed a mass of perfectly caseous matter. There was slight enlargement of the cervical chain of glands, notably on the right side. On laying open the trachea, that tube was found to be occluded just above the point of bifurcation by a mass of cheesy matter extending into the right bronchus, and proceeding from the largest mass in the mediastinum, which had ulcerated through the trachea at this point, the aperture measuring nearly half an inch along the axis of the tube, while for more than half an inch above the calibre of the channel was narrowed by the pressure of the gland from without. In the right lung at the apex, on its inner aspect, was a cavity with thick, fibrous, reticulated walls containing cheesy matter, this portion of the lung being adherent to the cheesy mass in the mediastinum. The bronchi were slightly dilated in the upper

* The clinical features in this case were subsequently fully commented on by Dr. Henry Thompson in a clinical lecture ('Med. Times and Gaz.,' Jan. 24, 1874).

lobe and much thickened. The rest of the lung-tissue was more or less solidified, especially in the neighbourhood of the cavity, where it was perfectly and uniformly solid, grey, and smooth on section. The margin of the lower lobe was collapsed and somewhat congested, while the surrounding parts were emphysematous, but the tissue was otherwise healthy. At the apex of the left lung was a mass the size of a bean, translucent on section, with a few scattered opaque granulations around a central caseous depôt. The rest of the lung was congested posteriorly, pale and anæmic anteriorly, with here and there a few patches of collapse. The mucous membrane of the larynx was healthy, save around the margins of the wound, where it was slightly inflamed. The incision had divided a small portion of the thyroid cartilage, the whole of the cricoid, and the first tracheal ring. The remaining organs were healthy, except the mesenteric glands, which were somewhat enlarged. The brain was not examined.

Apart from its pathological interest, the case was one of great clinical value as illustrating the influence of pressure low down in the trachea in the production of laryngeal spasm, the recurrent laryngeal nerve being in no way implicated (see Bristowe, 'St. Thomas's Hospital Reports,' 1871). *January 6th*, 1874.

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4. *Syphilitic disease of the lung.*

By James F. Goodhart, M.D.

Louisa K—, æt. 59, was admitted to Guy's Hospital, under the care of Dr. Pavy, on December 15th, 1873. She died within a few hours of her admission, of extensive hæmoptysis, and very little history could be obtained. It was stated that she had emaciated for a year, and had been altogether worse the last four months.

At the inspection, forty-one hours after death, the following points were observed:—Dark complexion, hair just turning to grey. She was fairly nourished and no dropsy existed. She had scars of old injuries about the legs. They were completely wanting in pigmentation.

The brain was not examined.

Pleuræ.—Both had old adhesions over much of their surfaces, which were only filamentous over the lower lobes and between them the lung and pleura showed a healthy aspect, the serous membrane being of normal thinness. The pleura at left apex was very thick.

Lungs.—Both much puckered, especially the left apex. The intervening tissue was silky and emphysematous. Sections of both lungs showed an irregular fibrous change in various parts, involving the lung somewhat extensively, and yet at the diseased spots not showing any well-defined boundary. Each patch of disease felt nodular, had a greyish-black appearance, was slightly granular on the surface, and had a very tough consistence. Small cavities had formed in two or three places in the centre of the tracts of fibrous change, were filled with pus and had a thick yellowish wall. At one spot a cavity was now forming by the sloughing out of a mass of tissue; at another, towards the base, a cavity $\frac{2}{3}$ inch in diameter was occupied by a pulmonary aneurysm of about a centimètre in diameter, on a large branch of the pulmonary artery. Blood filled the sac and its containing cavity, as well as most of the bronchial tubes of both lungs. The left lung was much smaller than normal, the right not much altered in size; no tubercle was found. Several small, hard nodules could be felt by the finger, but to the eye they were ill defined and spread out into the surrounding tissue, unlike ordinary tubercle, and they were not grey at all, but rather black. In the oldest parts of the disease, however, were three or four yellowish circumscribed lumps, which had the appearance of softening caseous masses, of tracts of caseous pneumonia or gummata. The bronchial tubes were healthy, except for some puckering and contraction, as also were the vessels of the lung. The pulmonary arterial coats were nowhere atheromatous.

The heart weighed $8\frac{1}{2}$ oz. The aorta, for an inch above the valves, was flaccid, irregular on the surface, and dilated. It was, indeed, extensively diseased, in a somewhat different pattern to the general one in atheroma. It was minutely speckled, and nowhere in thick raised patches. The surface was a little granular owing to the slight elevation of the speckles, but no more. The arch and thoracic aorta were also atheromatous in a peculiar spotted way, having patches with well-defined edges on a slightly raised base. The valves and muscle were good. Both carotids were atheromatous to slight extent. The radial arteries were good. Fauces healthy.

Liver.—60 oz. Capsule thick, and surface slightly irregular. At the anterior border of the right lobe was a puckered patch on the surface, which on section showed a firm yellow mass, just commencing to soften in one or two minute points. At its posterior part it was continuous with the liver substance by a fibrous state of liver. The capsule was thick over the right lobe, and at one spot was a chalky relic of some old disease. Tissue elsewhere quite healthy; no cirrhosis; no lardaceous disease.

Spleen capsule very thick; not lardaceous.

Kidneys 11 oz. Surfaces a little granular, and capsule adherent. No lardaceous disease.

Genital organs healthy. No gout.

The case is one, then, of fibroid disease or interstitial pneumonia, irregularly distributed throughout the lungs, and with a tendency of the patches to separate as sloughs. This condition in association with a gummatous patch in the liver is very suggestive of syphilis. But the question which this specimen was intended to raise was this: Is the particular form of disease here described characteristic of syphilis, so that without even a gummatous liver an opinion in favour of syphilis might have been formed? *January 20th*, 1874.

Acute interstitial pneumonia.

By James F. Goodhart, M.D.

Henry F—, æt. 20, was admitted under Dr. Moxon's care on Dec. 13th, 1873, and died on Dec. 25th. Fourteen years ago he had been in Guy's for an abscess in the axilla, but with this exception he had been always quite well till a week or two before admission. During a fight he fell and hurt the lower part of his left chest. He had pain there for two days, and then he felt no more till about December 6th, when he began coughing, and pain in his side returned. He worked on, having rigors the whole week, till Dec. 13th, when he was admitted. He then had almost absolute dulness below the sixth rib on the left side. No rub or crepitation. No expectoration. The heart sounds were normal. Fluid accumulated in the chest; his temperature rose to 103°. He had a brown expectoration, and the spleen became pushed down. Later on the whole left chest became dull, and subsequently pneumothorax occurred, and he died, exhausted.

Autopsy.—He was a coarse-featured boy. Only in the chest were

any abnormal conditions observed. No sign of old injury existed, but the anterior part of the chest was depressed on both sides on a level with the ensiform cartilage, owing apparently to a deformed sternum, which here dipped deeply backwards.

Pleuræ.—Right covered by recent lymph, and containing several ounces of fluid. Left.—Cavity filled by fœtid gas, which escaped with a whiff on opening the thorax. The lung was very adherent behind and below. In front and above the pleura was of a yellowish-white colour, and very thick. The cavity contained but little fluid. On inflating the lungs by bellows, air issued into the left pleural cavity from an aperture behind and below, about a third down the posterior part. The parts had to be cut away from the thoracic wall, being very adherent.

The left lung was very solid at the posterior part, and towards the lateral aspect two thirds down was a cavity opening into the pleura, with a surface boundary of soft sloughy pleura, giving way directly it touched. Beneath this was a cavity some two and a half inches in diameter, without any regular boundary, and filled by highly offensive grumous fluid. It was surrounded by a very dense tough lung, which cut with a smooth surface, very much like splenized lung in the absence of the granular surface seen in acute pneumonia. It was brick-red in colour; so tough was it that the finger could not be forced into it, and the bronchial tubes and vessels, instead of becoming exposed by the falling away of the parenchyma, or projecting a little as in a normal section, remained level with the surface, and were in many parts surrounded by tough white fibre, which, adherent to the vessels, or being a part of their adventitia, merged insensibly into the lung substance. The upper part of the lung was carnified.

The bronchial tubes had a swollen looking and injected mucous membrane.

Right lung nearly solid from acute pneumonia, which had apparently been a bronchial disease in its origin, since it could still be seen to be made up of coalescing lobules of catarrhally inflamed lung. Some of the lobules were yellow, and on the point of breaking down; others were still in the early pneumonic stage.

Heart 11 oz. Healthy; not displaced.

On examining the left lung microscopically it showed two things, to both of which attention is directed. 1st. Around all the sections of the bronchial tubes and small arterioles a very thick wall was noted, in some places quite fibrous in appearance, but more generally as a

dimly fibrous stroma filled in closely with large round nuclei—a state of things which corresponds closely with that described by Dr. Payne at a previous meeting of the Society. 2ndly, it shows an acute disease becoming chronic; that is to say, the cellular stage passing into the fibrous stage, and this not merely by an interstitial formation, but also, as it appears, by the organization of the cellular product in the interior of the air-vesicle. *January 20th*, 1874.

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5. *Congenital papillomatous web, uniting the vocal cords till the age of twenty-three years. Removal of the web and establishment of voice.*

By Morell Mackenzie, M.D.

Miss C—, æt. 23, a healthy young lady, was brought to me by her relative, Staff-Surgeon Snell, on November 22nd, 1873, on account of aphonia, which had existed since birth. She stated that in the autumn she had been paying a visit at the country house of Sir William Fergusson, when that gentleman noticed her voiceless condition, and on inquiry ascertained that during the whole of her life she had never produced a single vocal sound. Sir William Fergusson recommended her to consult me, and she accordingly came to town for that purpose.

From careful inquiries made by Mr. Snell, it was proved that in infancy and childhood Miss C— had never uttered a sound. As a baby, she was never heard to cry, and when she was a little older she was considered "the good child" who never made a noise. On one occasion in childhood her inability to cry had nearly brought about serious consequences, for having been fastened in a chair opposite the fire, she was forgotten by her nurse, and when discovered was found to be nearly roasted.

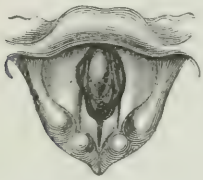
These facts are related to prove the absolutely voiceless condition of the patient in infancy.

On making a laryngoscopic examination, a web was seen to unite the vocal cords in the anterior half of the glottis. On inspiration

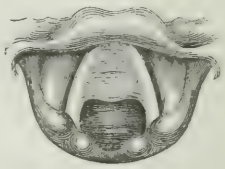
this membrane presented a flat surface; but on attempted vocalization the folded membrane had the appearance of a growth about the size of a haricot bean, of a bright-red colour.

The form of the web on inspiration and its appearance in vocalization are illustrated by the annexed drawings. (*Vide* Woodcuts 3 and 4.)

Woodcut 3.



Woodcut 4.



On the 6th of December Miss C— placed herself under treatment. The case was rather a difficult one to examine with the laryngoscope, as the young lady was very nervous; and on protruding the tongue its posterior part bulged up and obstructed the view of the laryngeal mirror. Instead, therefore, of practising laryngoscopy in the usual manner, it was found necessary to hold down the tongue in the mouth. On introducing a probe (both my hands being occupied), it became requisite for the patient to hold down her own tongue with her finger. In operating, subsequently, the same method of procedure had to be adopted. After examining her with a probe on two or three occasions, I first attempted to operate on the 15th of December, and succeeded in removing a small piece of growth with cutting forceps. On the 17th I again took away a small portion; and on the 19th succeeded in completely clearing the vocal cords. The patient at once spoke in a clear, natural voice. For a day or two after this the voice was a little husky, the operation having occasioned slight hyperæmia of the larynx; but on the 27th of December (that is, three weeks after the patient commenced treatment) the voice was quite natural, and Miss C— left town a few days later. Staff-Surgeon Snell was present at each *séance*.

The following is Dr. Whipham's report:

Four separate portions were submitted to microscopic examination, and their sppearances is shown in Plate V. Fragment 1 was a small conical tumour, hard, and of about the size of

a common vetch seed. It was composed of papillary outgrowths, and irregularly lobulated. Each papilla was covered with a thick layer of epithelium, the outer cells of which were flat, and more or less hexagonal; the innermost or those next to the structures, composing the bulk of the tumour, were of the columnar variety; the nuclei in all were clear and distinct, and this epithelial covering became more rapidly and deeply tinted with hæmatoxylum than did the tumour proper. Beneath this epithelium the papillary projections, of which the growth was made up, were composed of a stroma of connective tissue, the fibrous bands of which interlaced and crossed one another in various directions. In this fibrous stroma were scattered numbers of small cells, for the most part of round shape. Some few were oval; in size they did not vary. These cells were most abundant beneath the epithelial covering. In the centre parts of the growth they were few in number. The growth was well supplied with vessels, each papilla having at least one. At the base of the tumour were seen many healthy mucous glands.

Fragments 2 and 3 were flattened masses, opaque, of yellow colour, and irregular shape. They were found to be composed of fibrin, in the meshes of which were imbedded, here and there, white blood-globules.

Fragment 4 was a thin strip, much shrivelled by immersion in spirit. When placed in solution of hæmatoxylum it became much more readily stained than did the sections of the yellow portions (fragments 2 and 3), and as quickly as the outer layer of the tumour. This strip was, on further examination with the microscope, found to be a piece of mucous membrane.

The case is extremely interesting as showing that the vocal function may be established when it has remained in abeyance till adult life, and also on account of the undoubted congenital origin of the growth. In most of the similar reported cases congenital growths have occurred in the children of uneducated people, and there has been considerable difficulty in determining whether the growth was really congenital or whether it occurred in early infancy. In this case, however, it was clearly ascertained by Mr. Snell that the aphonia existed from birth. *February* 17*th*, 1874.

6. *Closure of the glottis by a syphilitic gummatous tumour.*

By Arthur Trehern Norton.

The patient from whom the specimen was taken was admitted into the waiting room at St. Mary's Hospital, in an unconscious state, and died before assistance could be rendered.

The specimen exhibited a tumour, larger than a pigeon's egg, occupying the right arytæno-epiglottidean fold, and extending outwards into the pharynx, and inwards into the glottis. The epiglottis was swelled, and doubled laterally upon itself by the extension of the tumour upwards, so that only a slight chink could be seen leading to the rima glottidis, instead of the large space which normally exists between the cartilages of Santorini and the epiglottis. There were also ulcers at the base of the tongue which could have been seen without the aid of the laryngoscope.

A section of the tumour showed it to be an areolar tissue development. Numerous areolæ, varying in size from that of a shot to that of a small pea, contained a softened yellow substance, found under the microscope to be nuclear or granular

Mr. Norton referred casually to similar cases in which he had performed tracheotomy, and remarked that had tracheotomy been performed in this case the tumour would have sloughed or suppurated, or possibly have been absorbed, and the patient would have doubtless recovered.

It was ascertained that the patient had been under medical treatment for a long time—a fact which shows the desirability of all practitioners learning something of the use of the laryngoscope. This tumour could have been detected by the application of a simple mirror without the dexterity of a laryngoscopist, and the fatal result could have been then avoided. *May 5th*, 1874.

7. *Papillomatous growths in the larynx and trachea; recurrence after thyrotomy.*

By Morell Mackenzie, M.D.

This specimen was removed from the body of a lady, æt. 72, who died last March from congestion of the lungs.

She had been under my care since April, 1868, and in May of that year thyrotomy was performed by Mr. Couper, and a large papillomatous growth removed from the left vocal cord.* The patient made a complete recovery, but two years later recurrence took place, and from time to time small portions were removed, laryngoscopically, with cutting forceps.

The specimen shows not only a small growth about the size of a tare on the left vocal cord, but also several growths, the largest about the size of a bean, occupying the left half of the trachea opposite the twelfth ring.

The history of this patient illustrates how, even in the cases best adapted for thyrotomy, where the larynx is large and the growth benign, perfect eradication cannot be secured by this mode of treatment. *May 19th*, 1874.

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8. *Fatal hæmoptysis in an infant.*

By R. Douglas Powell, M.D.

Alice G—, æt. 7 months, was brought to me as an out-patient, at the Brompton Hospital, on Thursday, March 30th, 1874, on account of a cough from which she had been suffering since Christmas.

* The case is related in detail in my work on 'Growths in the Larynx.' Churchill, 1871. Case lxiv, p. 162.

The cough was of a somewhat spasmodic character, and attended with a ropy mucous expectoration, slightly pigmented, which had to be removed from the mouth. At the time of coughing the child put its hand into the mouth, as infants do when the breathing is oppressed.

The child looked very ill. There was some lividity of the lips. There was noticed some defect in percussion resonance at the front of the chest, especially in the sternal region, and moist bronchial râles were scattered over the front and back.

The predisposition to phthisis was strong. All the (five) other children had died in infancy with the symptoms of consumption, the eldest being two and a half months; and on subsequently examining the father he was found to be suffering from cough and to present marked signs of phthisical chest disease. The paternal grandfather had also died of consumption at the age of thirty-three. On the Saturday morning, April 1st, at 7.30 a.m., having had no previous attack of hæmoptysis, the infant suddenly expectorated more than half a pint of dark partially clotted blood, and died almost immediately.

Post-mortem examination (thirty hours after death).—No abnormal external appearance. Heart natural. Larynx and trachea healthy. Lungs expanded, generally very bloodless, flecked with inhaled blood-patches at the anterior bases. The surfaces of both lungs were studded with subpleural miliary grey granulations of tubercle, and the lungs, on section, were also found to be disseminated with similar granulations.

The lower lobe of the left lung was imperfectly consolidated, presenting a mottled-grey section. At the base of this lobe there was a ragged cavity the size of a large filbert, traversed by trabeculæ some of which contained vessels still patent, and surrounded by caseous tubercular consolidation. Near the apex of the same lobe another small cavity presenting similar characters was discovered, across which stretched a vessel one tenth of an inch in transverse measurement externally, and having five eighths of an inch of its length entirely unsupported by pulmonary tissue. The wall of this vessel, for two thirds of its circumference, was considerably thickened, but at the upper third the vessel wall was irregularly eroded, becoming extremely thin and having given way at one point, the most distal point exposed. The vessel was traced to be one of the larger branches of the pulmonary artery.

Remarks.—Hæmoptysis in children is not very common, save as an occasional accompaniment of hooping-cough in early infancy. Fatal hæmoptysis at this age, so far as I know or have been able to ascertain, has not before been described. Nor is miliary tuberculosis of the lungs common at so early an age, the remarkably strong family predisposition in this case having apparently greatly hurried on the manifestation of the hereditary disease. I should be disposed to range this with the third class of cases of fatal hæmoptysis referred to in a former communication ('Transactions,' vol. xxii, p. 55), viz. among "those cases in which fatal hæmoptysis occurs from rupture of a vessel in the course of rapid breaking down of degenerated tubercular or pneumonic consolidation." The erosion of the thickened vessel on one side may very possibly have taken place while yet that side only was exposed. *May 19th*, 1874.

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9. *Syphilitic narrowing of the trachea.*

By W. Pugin Thornton.

T. W—, æt. 31, was twice admitted into the Hospital for Diseases of the Throat on account of difficulty in breathing, once in 1873, and again in 1874.

According to his statement, he had had a chancre in May, 1871; a skin eruption in the August following; an ulcerated sore throat in October; and in January, 1872, a sore throat again, his voice this time being affected. That at the latter end of the year his breathing became slightly difficult; at times it improved, but in October, 1873, it became so bad that he was taken into the Throat Hospital. He then had marked stridor in his breathing. On examining him with the laryngoscope he was found to be suffering from syphilitic laryngitis. After remaining three weeks in the hospital he was discharged, the stridor having entirely disappeared, and his breathing being almost normal.

One day, in November, whilst walking in the streets, he fell down, seized with sudden and extreme dyspnœa. He was car-

ried into St. Bartholomew's Hospital, where tracheotomy was performed.

On March 20th, he was again admitted into the Throat Hospital, wearing a tracheotomy tube. His breathing then was laboured, and with a whistling noise. A tube half an inch longer was put in the place of the old one, and for about a week his respiration was much better, but after that time it gradually again became embarrassed. To ascertain where the obstruction to the breathing was, a bent probe was passed through the tracheal opening down the windpipe, but no hindrance was met with. No further operative measures were deemed advisable, as the distance between the tracheal opening and the upper edge of the sternum was small.

The *post-mortem* examination showed extensive thickening and ulceration of the larynx, the ulceration extending down the trachea as far as the bifurcation of the bronchi. About the fifth ring of the trachea a cicatricial web was stretched across, with an opening through it sufficient only to admit of a number eight œsophageal bougie.

This opening explained the non-resistance to the passage of the probe that had been passed down the trachea during life. The distance between the orifice for the tracheotomy tube and the web was one and a half inch.

Such a case as the above resembles very much in its symptoms one in which the trachea is encroached upon by an aneurysm; the diagnosis between the two oftentimes being difficult.

May 19*th*, 1874.

III.—DISEASES, ETC., OF THE ORGANS OF CIRCULATION.

1. *Very large aneurysm of the descending aorta, forming a tumour in the left dorsal region.*

By T. B. Peacock, M.D.

The aneurysmal dilatation arose from the descending portion of the arch of the aorta. It commenced an inch and a quarter from the origin of the left subclavian artery, and involved the posterior and right side of the artery over a space of an inch and three quarters in length. The sac was bilobulate; one portion extended across the spine to the right side, producing extensive erosion of the bodies of the fourth, fifth, sixth, and seventh vertebræ, and this portion measured three inches transversely and four vertically. The left part of the sac was by far the largest, extending behind the lung as high as the point of articulation of the first rib with the vertebræ, and below reaching to the level of the middle of the tenth dorsal vertebra. A considerable length of the bodies of the second, third, fourth, fifth, and sixth ribs were destroyed, so that the sac lay immediately beneath the serratus magnus muscle, whose origin bounded it in front and externally. The sac contained only fluid blood and when filled would have held at least two quarts.

The tumour had pushed the left lung forwards and had considerably compressed it so as to render it quite flat, and had become adherent to it. The lung also was adherent to the parietes below and in front, but was not otherwise diseased. The sac had not exercised any permanent pressure on the œsophagus, bronchi, or nerves. The ascending aorta and large vessels were natural in size, and the heart was free from disease.

The following is the history of the case:

R. G—, æt. 52, admitted into St. Thomas's Hospital under the care of Dr. Peacock on the 11th of February, 1873. He stated

that he had served in the Navy from 1835 to 1862, and during that time had no severe illness except dysentery, and had met with no serious accident. Since leaving the Navy he had been employed as a labourer, but had not hard work. He was of a healthy family, his parents having lived to advanced ages, and all their family of ten being alive except two, one of whom was drowned at sea.

He was in good health till twelve months before he entered the hospital. His symptoms commenced with a fall, which occurred when he was walking; his foot slipped and he fell back flat upon the pavement. He was much stunned at the time and had pain in the back, and this pain, though after a time better, was never entirely lost. It was situated in the region of the left shoulder-blade, and after the immediate effect of the fall had subsided gradually increased, and in about three months he began to lose flesh. In five months after the fall he felt pulsation in the seat of the pain; and about a month after this his wife noticed a distinct beating there, and soon after his breathing became affected and he had difficulty in swallowing, the food apparently going down to a given point and then stopping. Though the pain was increased by active exertion, he continued at his work till two weeks before his admission into the hospital.

When admitted, though his general health was not materially impaired, he was thin and excessively pallid; his breathing was short, and he complained of pain in the chest and of cough and expectoration. There was a large tumour at the left side of the chest behind. It commenced above, at the top of the shoulder, and extended down to the lower angle of the scapula, and laterally it reached from near the spinous processes of the vertebræ to the fold of the axilla. The tumour was very prominent about its centre and pulsated very obviously both to the eye and touch. He complained of pain commencing in the shoulder-blade, and extending to the top of the shoulder and down the left arm. The sternum also was pushed forwards, but the heart's dulness was not increased in extent. The first sound of the heart was somewhat rough and prolonged and the second very decidedly intensified, but there was no murmur. There was also no murmur to be heard in any part of the tumour. He had difficulty of breathing, and the inspiratory sound in the dorsal regions was somewhat stridulous. The pulse at each wrist was very small, but there was no obvious inequality between the two. His voice had a somewhat hollow sound. After his

admission into the hospital the tumour steadily increased in size, his breathing became very short and hurried, and the prostration rapidly increased. The integuments over the tumour towards the lower angle of the scapula became very thin, and he suffered from constant and severe pain, which was only relieved by the frequently repeated use of morphia hypodermically.

On the 15th of May some patchy redness was noticed over the most prominent part of the tumour, and this soon acquired a dingy hue. It was evident that the skin would have soon given way had life been prolonged. He had previously been placed in a position to throw, as far as possible, the pressure of the tumour off the back, and the surface was now covered with strips of soap plaster spread on soft wash-leather. He rapidly became more prostrated and died exhausted on the 22nd of May. *October* 21*st*, 1873.

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2. *A case of aneurysmal dilatation of each of the sinuses of Valsalva.*

By Charles Henry Ralfe, M.D.

W. S—, æt. 25, a Chinaman, native of Penang, was admitted into the Seamen's Hospital under Dr. Ralfe, October 9th, 1873, complaining of general dropsy and bronchitis. These symptoms had gradually crept on him for some weeks previous to his admission. During the last fortnight he has had repeated attacks of epistaxis.

Very little information could be gained as to the early history of the case; he had never ailed, he said, till this illness, never had had rheumatism or syphilis; his habits were temperate, but he had been exposed to cold and wet and to continuous hard work.

On admission, the skin was pale and the general dropsy intense, deep pits being formed by the slightest pressure of the fingers. The dyspnœa was most urgent, with frequent cough, which brought up a frothy sputa often tinged with blood. The pulse was small and irregular; the urine scanty, albuminous, and contained a few

casts. Examination of the chest showed that the area of the heart's impulse was increased in extent, also the region of præcordial dulness. A double bruit was heard at the base, of which the systolic was the most distinct; at the apex there was an indistinct systolic bruit.

The symptoms increased in severity till October 16th, when, to relieve his great distress, he was bled to eight ounces from the arm. This for a short time afforded much relief, the dyspnœa was less urgent, the œdema almost disappeared, the kidneys at the same time acting freely. The improvement was only temporary, the dyspnœa and œdema quickly returned. On October 25th he had an attack of urgent difficulty of breathing, followed by collapse. He died October 27th.

On examination after death the pericardium was found to contain some serous fluid, but no signs of pericarditis old or recent. The heart was greatly enlarged, and weighed twenty ounces when freed from coagula; the left ventricle was dilated and hypertrophied, the aortic orifice was considerably widened; the semilunar valves healthy, but, owing to the dilatation of the orifice, incompetent. Each one of the sinuses of Valsalva was dilated into an aneurysmal pouch. The aneurysms varied in size. The pouch formed in the sinus, from which the left coronary artery is given off, was very small, so small that at first sight in comparison with the others it appeared as if no dilatation had occurred. The aneurysm of the sinus, from which no coronary artery is given off, was the largest, and measured one inch and a quarter wide and one inch deep. The sinus from which the right coronary artery arises measured three quarters of an inch wide and half an inch deep.

The first portion of the aorta was dilated, and its surface marked with atheroma.

The left auriculo-ventricular orifice was dilated. The lungs were congested and very œdematous.

The liver contracted and presented a nutmeg appearance on section.

Kidneys were about the natural size; the capsule was adherent in parts, the surface mottled and granular; their section showed that the cortical portion was diminished, and was smaller than the pyramidal.

The peritoneum contained about four pints of serous fluid and some flakes of lymph. *November 4th*, 1873.

3. *Fibroid induration of the heart.*

By T. Henry Green, M.D.

E. B—, æt. 52, was brought to Charing Cross Hospital on May 22nd, 1872, quite dead. He died quite suddenly, and was seen to be in apparently good health half an hour before his death. He was a shoemaker by trade and a widower. He appeared to have no near relatives or intimate friends, and I was unable to obtain any account of his previous history or of his mode of death.

Autopsy.—The most remarkable feature at the *post-mortem* examination was the change in the heart. The organ was very much enlarged, weighing 20¾ oz. The pericardium was normal and not anywhere adherent. The principal seat of the enlargement was the left ventricle; this ventricle was much dilated, and its walls measured from half to three quarters of an inch in thickness. The endocardium lining it was considerably thickened, especially towards the apex, and was of an opaque white colour. The wall of the ventricle was exceedingly firm and tough, cutting with the scissors almost like a piece of tendon. It could be seen by the naked eye that the areolar tissue had been in great measure replaced by a fibroid growth. This was much more marked in the inner third of the ventricular wall and in the papillary muscles; the latter were, indeed, almost completely converted into a fibroid tissue. To the more external portions of the ventricle the muscular tissue presented a much more normal appearance. The growth was by no means uniformly distributed, but was much denser and more abundant in some spots than in others. The right ventricle was also somewhat dilated, and its walls were, perhaps, rather thicker than natural, but they were not increased in consistence. The valves were all perfectly normal. There were a few patches of fatty degeneration and atheroma on the lining membrane of the aorta. The surface of the heart was well covered with fat, which in some parts appeared to be insinuating itself between the most external muscular layers.

The brain itself was healthy. The arachnoid was somewhat opaque, and the cerebral vessels were much diseased. The lungs

were congested and œdematous. The liver was normal. The kidneys were rather large, their capsules were slightly adherent, and the cortices somewhat swollen and granular. The body generally was exceedingly well nourished, and in no part were there any lesions indicating the existence of constitutional syphilis.

Microscopical examination of heart.—Thin sections of the left ventricle, examined with $\frac{1}{4}$-inch objective, showed that the morbid change consisted essentially in the development of fibroid tissue around the blood-vessels in the intermuscular septa. In some parts the new tissue was richly cellular, whilst in others it was more densely fibrillated: in short, it presented all the characters of the new tissue met with in a cirrhosed liver. The growth, as it extended between the muscular fibres, gradually replaced them, and the fibres themselves were seen in various stages of atrophy and fatty degeneration. (For drawings of the microscopical appearances of the heart, and remarks on the pathology of the disease, see Green's 'Pathology and Morbid Anatomy,' 2nd edition, p. 254.)

November 4th, 1873.

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4. *Rupture of the heart.*

By Andrew Clark, for H. Hammond Smith.

A woman, aged about 60, was brought to the Middlesex Hospital dead, having been run over by a vehicle when crossing Regent Street. The person who picked her up said she was dead before she could be got into a cab, and never spoke after the accident. There were no external marks, with the exception of a slight abrasion over the left parietal bone.

At the *post-mortem* examination, made sixteen hours after death, all the organs were found normal. The pericardium was distended, and on cutting it open it was found full of semifluid blood. This being cleared away and the heart examined, there was found an aperture large enough to admit the points of an ordinary pair of

dissecting forceps in the apex of the right ventricle close to its junction with the left. The walls of the heart did not appear thinner than usual, neither did the microscope show fatty change.

November 4th, 1873.

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5. *Fibroid thickening round branches of the pulmonary artery.*

By J. F. Payne, M.B.

The lung exhibited was taken from the body of a married woman, aged 33, who had suffered for some years from bronchitis, but died of a puerperal affection unconnected with pulmonary disease. Both lungs were somewhat congested and tough, but not otherwise altered, except the lower right lobe. In this all the branches of the pulmonary artery were found to be surrounded by some fibroid material, which had the appearance of starting with thickening of the outer coat of the artery or periarteriitis. The mass surrounding the main branch of the artery distributed to this lobe formed on section a belt nearly a quarter of an inch in width. It was mostly of a greyish colour, but in the central portions yellow or slightly greenish, and somewhat translucent, not soft or crumbling. Around the smaller branches the material looked like ordinary fibrous tissue, and was, perhaps, one eighth of an inch thick in the case of an artery the size of a quill. When the arteries were followed out towards the periphery of the lung the induration became somewhat more diffused, but there was no general fibroid change. The smallest arteries were evidently somewhat dilated. The inner surface of the arteries was slightly opaque, but not actually atheromatous. There was no thickening around the bronchial tubes, though these were generally inflamed and the smaller dilated. There was no general pneumonia, no tubercle, or caseous products. The bronchial glands were congested but not notably diseased.

Microscopical examination showed most of the periarterial masses to be composed of a dense, fibrous, and nucleated tissue, which, in some places, became simply granular and amorphous. This formed

a distinct zone around the artery and was continuous with its outer or adventitious and middle coat. The inner coat was unaltered. The apparent thickness was increased by a species of dense pneumonic hepatization filling the air-cells. Clots were contained in the smaller branches, and some of these, with the capillaries, were irregularly dilated. The lung tissue between was natural.

Remarks.—The general character of the disease was that of a fibro-nucleated or small-celled new growth, not unlike that characteristic of syphilis. The naked-eye appearance of the larger masses was also much that of a gumma. The mode of extension of the growth also, in some respects, resembled the syphilitic periarteriitis sometimes seen in the brain; and the whole disease was distinctly different from any ordinary fibroid change, induration, cirrhosis or chronic pneumonia of the lung. On these grounds the hypothesis of a syphilitic origin for this morbid condition of the lung was irresistibly suggested. At the same time there was no confirmatory evidence either in the autopsy itself or in the history of the patient; and a similar periarterial growth in the lung does not seem to have been previously described as the consequence of syphilis; but neither has it been observed in the course of any other disease.

December 2nd, 1873.

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6. *Acute endo-, peri-, and myocarditis during septicæmia following whitlow.*

By Rickman J. Godlee.

This specimen is the heart of a man who was suffering from what must be called septicæmia following an ordinary thecal abscess of the middle finger; and, as it appears, the immediate cause of death was an acute inflammation of the muscular tissue of the heart itself accompanied by peri- and endocarditis.

The history of the case is very briefly as follows:—G. D—, a delicate-looking man, æt. 30 years, married, and, according to his own account, always healthy, and following the trade of a carpenter,

was admitted into University College Hospital on the 3rd of the present month, when he told the following tale. Thirteen days before, viz., on November 21st, while making some cornices of block tin, he cut his finger, causing slight hæmorrhage. The next day his finger was a little red and painful, and the day after it was decidedly more so, and accordingly he attended at the hospital as an out-patient, where he came under the care of Mr. Beck. The swelling and redness were then beginning to extend into the palm, and one or two blisters had formed; Mr. Beck, therefore, made an incision into the finger, and poultices were applied, and on the following day another incision at the root of the finger gave exit to a large amount of matter and caused the patient much relief.

Since that time till his admission there had been a gradual improvement in the local disease, but he continued to feel extremely unwell, and almost completely lost his appetite.

Four days later, viz., on December 1st, he went out for a walk, and on returning and resting for a short time he felt a stiffness in the right knee, which made it soon impossible for him to stand, and the thigh became swollen, painful, and tender.

On admission he is described as being weak, pale, and restless, with a temperature of 103°. His appetite moderate, tongue dry, with white furred edges, and bowels irregular. There was still some swelling about the right middle finger, and two sinuses leading down to bare bone on its anterior aspect, the odour of the discharge from which was highly offensive. There was considerable swelling and some œdema over the upper part of the right knee, and tenderness along the outer side of the lower third of the thigh, with slight enlargement of the glands of the groin.

On December 4th, the day after admission, his temperature was 101° F. in the morning, with a pulse of 80, the latter very distinctly dichrotous, but by the evening the pulse had risen to 96° and the temperature to 103° F; and in the morning of the day after the temperature had reached 104° F., the pulse remaining the same, 96°. The patient had then a very anxious look, but expressed himself as feeling better and answered questions readily and rationally. His tongue was more dry, of a bright red colour, with patches of a thick white and brownish fur. The thigh was examined very carefully, and the probable presence of pus determined.

Next day, December 6th, there had been a fall of temperature to 101·4°, the pulse being 100, extremely feeble but regular; the patient

was very weak and irritable, complaining of great thirst and dryness of the mouth and tongue. The respirations were hurried and laboured, and on listening to the heart a loud rasping friction murmur was heard over its whole area. The superficial dulness was but little, if at all, increased.

As the presence of pus in the thigh was diagnosed, the patient was placed under the influence of chloroform, and an exploratory puncture was made with the pneumatic aspirator in the outer side of the thigh, and afterwards a considerable amount of dirty brownish pus was evacuated by two incisions, one on the outer side and one in front of the thigh. The patient bore the chloroform well, and remained in the same condition as before the operation till evening, when considerable dyspnœa came on, and he became delirious and died at 11 p.m.

A *post-mortem* examination was made thirty-eight hours after death, when rigor mortis was still well marked. The following is a summary of the points noticed:

In the finger the tendon was exposed in both incisions; suppuration was limited by the sheath of the tendon of the middle finger, and did not extend into the general palmar synovial sheath. Corresponding to the whole of the extent of the abscess the bones were rough and bare. The first and third joints of the finger were open and disorganised, the second remained entire. There was no disease of the veins or lymphatics of the arm, and, in fact, the mischief here seemed to be purely local.

The abscess described in the thigh extended down almost to the knee-joint, but did not communicate with it; it was about four inches in diameter, and had no distinct limits, its walls being indefinite and sloughy. The synovial membrane of the knee-joint was slightly injected, the synovial fringes showing up distinctly, and it contained a few drops of turbid serum, but no pus such as existed in the abscess outside.

The right pleura contained about half a pint of serous fluid slightly stained with blood, the left was merely moist, containing no excess of fluid. The lungs were both engorged with blood, especially in their posterior lobes, and both were very œdematous; part of the lower lobe of the right lung was collapsed from the pressure of fluid in the pleura; in other respects nothing whatever amiss was to be found.

The liver, kidneys, spleen, and intestines were carefully examined, but presented nothing bearing upon the case.

The external surface of the pericardium was more red than natural, and it contained in its interior about two ounces of reddish, turbid, almost purulent fluid. Its internal surface was rough, almost gritty to the touch, and had entirely lost its gloss, being of a dirty brown colour.

The right auricle contained a few large, loose, post-mortem clots and some fragments of older clot in the appendix. The valves on the right side of the heart were healthy, but on the left side they were all reddened, and though this was no doubt chiefly due to *post-mortem* staining, still distinctly enlarged vessels could be seen both in the mitral and aortic valves by means of a lens. There was no sign of previous valvular disease.

But the most marked changes had taken place in the muscular tissue itself. Throughout it had lost its natural red colour, and had assumed a dirty brownish tint, passing in some parts beneath the pericardium into a lighter brown, almost yellow. It was mottled all over with paler spots, and near the apex and half way up the side of the left ventricle were some patches in which the muscular substance had broken down into a dirty pulpy mass, in which some small hæmorrhages were to be seen, and these parts were marked on the surface of the heart by dark purple blotches.

I must here apologise for the poor condition of the specimen, which, owing to the unavoidable necessity of keeping it in ice for ten days, does not show at all the varieties of colour which I have described. The pulpy condition in the places where incisions have been made is pretty well seen.

Similar appearances were seen in several of the columnæ cornæ; one has been cut into and shows the pulpy condition well. The other parts of the heart-substance, though softer than natural, were not so soft as their appearance would have led one to expect.

A microscopical examination of the pulpy parts showed the fibres to be extremely granular, devoid of structure, and breaking up readily into short fragments; in the water in which they were teased out were numerous fatty corpuscles and much granular *débris*.

Sections of the neighbouring parts, hardened in alcohol (of one of which a camera lucida drawing is exhibited) show a distinct multiplication of cells between the fibres, and a more extensive swelling of the

connective tissue between the bundles. The nuclei on the fibres are very distinct, and the fibres themselves are not very markedly unhealthy. The striation varies much in different preparations, but is on the whole decidedly less distinct than natural. In the section from which the drawing was made the Dammar varnish in which it is mounted may possibly account for their indistinctness.

It is unfortunate that there were no symptoms that led to the examination of the heart until the morning of the patient's death; but it is remarkable that the pulse, though weak, was neither very frequent nor at all irregular. It is scarcely likely that the disease had not been in existence for at least a day or two previously, but still there was no pain in the cardiac region nor any marked dyspnœa until very shortly before death.

These symptoms are very much like those described in the writings of Dr. Walshe and Dr. Wilks on this subject, with this important exception, that they lay stress upon the increasing irregularity of the pulse, which never existed in this instance. The same may be said with regard to the symptoms detailed in Von Dusch's work on 'Diseases of the Heart.'

The description given by these authors agrees also very nearly with both the naked-eye and microscopical characters observed here, as does that of MM. Cornil and Ranvier. The latter pathologists give it as their opinion that the multiplication of cells between the fibres is the essential condition of inflammation of the heart's tissue, as opposed to the idea of Virchow, to which Rindfleisch and others appear to incline—that the disease is characterised by the pressure of fatty granules in the fibres themselves. This condition MM. Cornil and Ranvier consider to be secondary, and the result of the pressure exercised by the new growth; the appearances found in this instance are certainly in favour of their view.

We have here another instance of the extreme difficulty, if not impossibility, of diagnosing this condition of heart during life, and I may add that not the least interesting feature of the case, as it appears to me, is that chloroform was administered with perfect safety and to complete anæsthesia only a few hours before the patient's death. *December* 16*th*, 1873.

7. *Heart, lung, liver, and kidney, from a patient the subject of mitral obstruction.*

By W. Cayley, M.D. (for A. Silver, M.D.).

G. I—, then a youth of sixteen, was first seen by Dr. Silver in December, 1871. He was undersized and badly developed, and he had a history of more than one attack of rheumatism. He had all his life been short of breath, and latterly had suffered from palpitation. In November of that year he brought up some mouthfuls of blood without coughing, and continued to bring up blood to the time of his admission.

On examination an extended apex-beat was visible, and over it a distinct thrill was very perceptible. Where this thrill was most intense a loud churning sound was audible, ending in a short, sharp, clicking sound; but, tested by the carotid pulse, this churning sound was presystolic; the second sharp sound was the real first sound totally altered in character. No true second sound was audible at the apex, but at the base the sounds followed in due sequence, though the second sound was sometimes reduplicated, and the pulmonary second sound was always much sharper and more accentuated than the aortic. The pulse was very irregular, sometimes intermittent; but there was no sign of anything being wrong with the right side of the heart beyond hypertrophy, with some degree of dilatation. What was very peculiar was an impulse sometimes seen in the third left interspace, antecedent to the apex-beat and coincident with the presystolic sound. The diagnosis was a pure mitral stenosis, without regurgitation and without alteration of the left ventricle, hypertrophy of the left auricle, chronic congestion of the lungs giving rise to the hæmoptysis and breathlessness, and marked hypertrophy of the right ventricle. This last year he again came under the care of Dr. Silver, his condition greatly altered for the worse; for whereas in 1871 there was no sign of tricuspid regurgitation, that was now manifest, and he was suffering from considerable œdema of the lower extremities. Cough and breathlessness were constant, and he brought up some phlegm, but no blood. The old rhythm of the heart-sounds could no longer be made out, and this continued to the end. He died during the recent fatal fog, which, no doubt, accelerated his death.

The *post-mortem* examination showed the mitral orifice greatly narrowed, and with one or two little warty beads on its edges, but the valves were competent. The left auricle and the right ventricle were enormously hypertrophied, and the tricuspid orifice greatly dilated. The right auricle was also very large. The lung-tissue was dense, hard, and had undergone marked brown induration. The liver was large, hard, and nutmeg. The spleen was also larger and harder than usual, as were the kidneys.

In all probability this condition of the mitral orifice was congenital, though the small warty bodies were probably deposited in one or other of the attacks of rheumatism. Curiously enough, the boy's sister suffers from a similar malformation, if I may call it so. The case is, however, mainly of interest as affording a typical example of pure mitral stenosis and its consequences, and as affording an insight into the mechanism of presystolic bruit and thrill. *January 6th*, 1874.

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8. *Aneurysm of the aorta, opening into the pulmonary artery.*

By Frederick Taylor, M.D.

R. B—, æt. 39, was admitted into Guy's Hospital, December 24th, 1873, and the following history was obtained:

He had been a soldier and had served in India. He never had any venereal disease, nor rheumatic fever, nor gout.

For some years he had suffered from shortness of breath on exertion. During the severe foggy weather, in the early part of December, he had first felt ill from pains in the chest and increased dyspnœa. For the last few days he had not been able to retain his food, and two or three days ago his legs had begun to swell.

He was carried into the ward, and complained of orthopnœa and general prostration. His face was thin, with a yellowish tinge about the forehead, and full-coloured, hardly livid lips. The abdomen, thighs, and legs, were œdematous, and the feet and toes

very cold and blue. The mobility of the chest was natural, but there was some coarse crepitation at the right base posteriorly.

The following was the condition of the cardiac region:

Impulse neither forcible nor heaving, the apex beat reaching no farther than the nipple line. Præcordial dulness from the middle line of the sternum, nearly to the nipple line; above hardly increased, except over the sternum, which was dull as high as the level of the second costal cartilages. Over this region a considerable thrill, the rhythm of which was not particularly noticed. At the base a loud systolic and rather less loud diastolic murmur; the latter heard also half way down the sternum, the former towards the apex, and a little in the axilla, but not in the back. The pulse 108, not splashing in character; the right weaker than the left; dichrotic wave felt only in the right. No marked throbbing in the carotid arteries, but much distension of the external jugular veins.

The patient rallied for a short time, but died, cold and restless, within forty-eight hours of admission.

Post-mortem examination.—The heart is large, weighing 20 oz., rounded in shape, the right ventricle being dilated and assisting in the formation of the apex. The wall of the right ventricle is 4 mm. in thickness, and firm; that of the left ventricle 12 mm. thick, and less dense in structure.

The ascending aorta presents an aneurysm, arising just above the valves, and involving that part of the circumference of the aorta which corresponds to the left half of the anterior valve and the anterior half of the left posterior valve; it thus grows forwards and to the left, pressing on the base of the pulmonary artery, to which it is firmly united for more than one third of its circumference. At the most prominent part the united walls are excessively thin, and present a vertical aperture nearly half an inch in length, by which the aneurysm communicates with the cavity of the pulmonary artery. The margins of this aperture are thin, the right especially, and except quite at the upper end, where there are a few fine vegetations, are perfectly smooth.

The aneurysm measures 1 inch by $1\frac{1}{2}$ inch, and would easily hold a walnut.

There are patches of atheroma in the rest of the ascending aorta, especially about the origin of the right coronary artery. Aortic valves healthy. Of the pulmonary valves the anterior and the left posterior are healthy, but the right posterior corresponding to the

most prominent part of the aneurysm is for the most part, including its left half, closely united to the wall of the pulmonary artery. Indeed, the part adjacent to the left valve is quite lost in the artery wall, and it is here that the aneurysm wall is the thinnest and presents the rupture previously mentioned. This opening is exactly at the level of the valves, being on the left side bounded in its whole length by the attachment of the adjacent healthy valve. The mitral valve and the muscular substance of the heart are good.

The liver is deeply congested, nutmeg-like, and weighs 61 oz.

The spleen firm and healthy; the kidneys coarse, weighing 8 oz.

Both lungs are very full of blood, but not otherwise diseased.

Such cases as the above are at present chiefly of interest in connection with the physical signs they present during life. The dulness over the sternum, the thrill at the base of the heart, and the double basal murmur, seemed to indicate aortic aneurysm with regurgitation through the aortic valves. But these last were perfect, and the diastolic murmur heard down the sternum could have been explained by the facts, firstly, that the aneurysm bulged into the pulmonary artery, and probably interfered with the action of the valves of this artery; secondly, that the aperture of communication was just at the level of the valves, and the blood, during relaxation of the ventricles, must have passed from the aneurysm downwards into the right ventricle.

I have unfortunately no record of the second sound. The rupture probably occurred some time before death, as there were some fine vegetations on the edge of the aperture. The patient was so near moribund on admission that little could be gained from his general appearance to aid in the diagnosis. It may be observed, however, that cyanosis was certainly not present to a greater degree than could be accounted for by his collapsed condition.

February 17th, 1874.

9. *Partial rupture of the aorta and separation of the coats by the extravasated blood; "dissecting aneurysm."*

By T. B. Peacock, M.D.

A man, æt. 61, an actor of the Adelphi Theatre, got on to the top of an omnibus at the end of Westminster Bridge, and immediately after was seized with severe pain in the chest and difficulty of breathing, and came directly to St. Thomas's Hospital. When admitted, at 5.30 p.m., on the 22nd of December, 1873, he complained of severe pain in the cardiac and epigastric regions, and also of slighter pain in the loins. His breathing was hurried and difficult and he felt faint. His face was pale and bathed with perspiration. He had an anxious expression of countenance and his extremities were cold. He walked to the hospital and up to the ward without assistance. After he was in bed his pulse was found to intermit and his breathing was very laboured, and he was more easy when sitting up. He had sinapisms applied and some medicine was given to him, but he continued much in the same state. At half-past 7 his temperature was found to be only 97·2°, and the urine had a specific gravity of 1015, and contained a small quantity of albumen, from $\frac{1}{12}$th to $\frac{1}{16}$th. About 9 o'clock he became somewhat easier; there was then found to be slight deficiency of resonance on percussion at the posterior and inferior parts of the chest and some fine crepitation was there audible. There was also an occasional murmur heard in the præcordial region. At about a quarter-past ten he vomited some fluid, apparently tea which he had taken, and immediately after was seized with severe pain at the heart which he indicated by placing the hand there, and he sat up in bed leaning forwards. In about a minute and a half he fell back on the pillow quite blanched and after gasping for three or four minutes expired.

It appeared on inquiry afterwards that he had always been a temperate man. He had suffered for the last five years from giddiness, and had occasionally had attacks somewhat similar to that in which he died. He survived the first commencement of the symptoms about five hours. For the history of the case I am indebted to Mr. T. Highton, the house physician.

The examination of the body was performed by Dr. Payne. The body

was well nourished. The left pleural cavity was completely filled with blood, serum, and clots. The blood weighed five pounds; a bag of coagulated blood also projected into the pleural cavity from the mediastinum, and the whole of the mediastinum was filled with coagulum, which surrounded the aorta, bronchi, and œsophagus. The left lung was considerably compressed and floated upon the blood contained in the pleural cavity. The pericardium was natural.

In the arch of the aorta, at the commencement of the descending portion, there was a rupture of the internal and a portion of the middle coat of the vessel. It was fully three quarters of an inch in length, and extended across about one half of the circumference. Its direction was partly transverse and partly longitudinal, so as to form a distinct angle, and the edges were ragged. From this point there was a separation of the laminæ of the middle coat which extended upwards to the origin of the aorta and downwards to its bifurcation and for a short distance along each common iliac artery. The separation was obviously between the laminæ of the middle coat over the greatest part of the extent, but where the blood had been extravasated into the mediastinum the middle was apparently separated from the external coat. There were some small clots in parts of the separated tissues, and they were generally much dyed with blood. (Plate IV.)

The inner surface of the aorta was very atheromatous throughout, there being thick, yellow, masses projecting from the surface. Some of these were softened, but there was not much calcareous matter. The aorta was dilated at the arch, and especially in the ascending portion, and the large vessels also were enlarged. The separation did not, however, involve those vessels.

The heart was very much loaded with fat. It was enlarged and the walls of the left ventricle were very thick, and the cavity contracted and free from blood, presenting, indeed, a characteristic example of the so-called "*concentric hypertrophy.*" The valves were very atheromatous and the muscular substance of the walls had undergone the fatty degeneration.

The kidneys weighed seven ounces. The surface was smooth, the capillaries much injected, and the substance generally wasted both in the cortical and pyramidal portions, but they were not hard.

The other organs were free from disease.

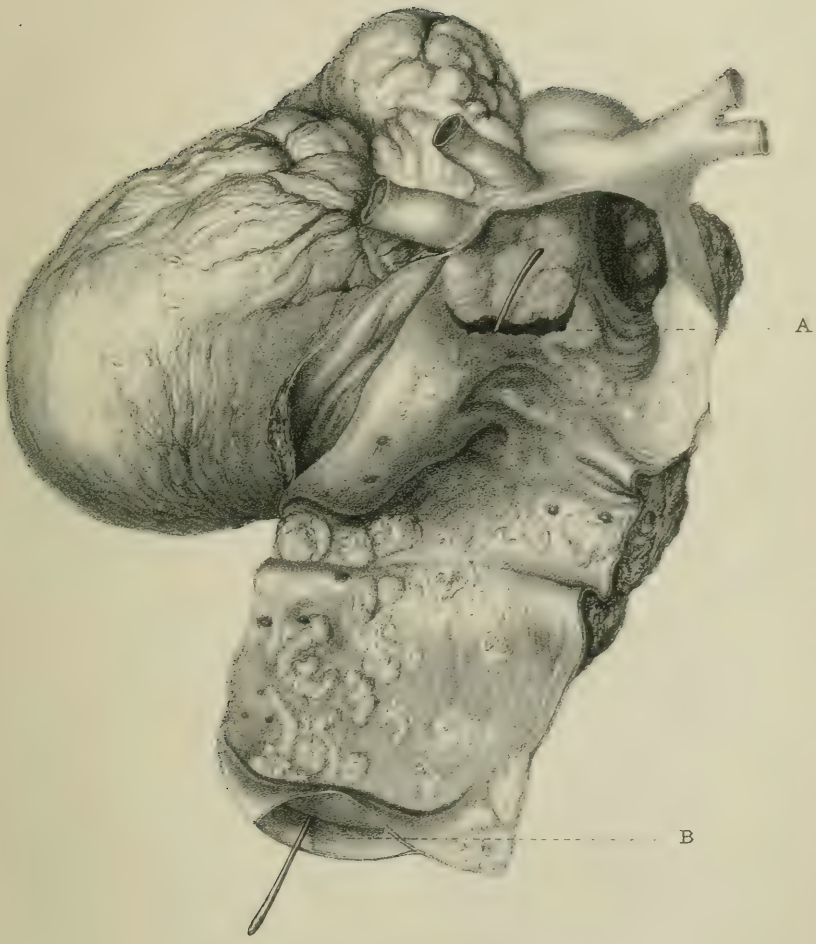
The specimen affords a characteristic example of the so-called "dissecting aneurysm" in the second stage.

DESCRIPTION OF PLATE IV.

Plate IV illustrates Dr. Peacock's case of Dissecting Aneurysm. (Page 59.)

A. Rent in the inner and part of the middle coat of the aorta.

B. Separation between the layers of the middle coat, along which a probe is passed.



Drawing to illustrate Dr Peacock's case of dissecting Aneurysm of the Aorta.

E. Burgess del. et lith.

W West & Co imp

Rents of the arterial tunics in the situation occupied by the internal rupture in this case are much less frequent than ruptures of the coats in the ascending portion of the aorta. In eight cases, however, out of 73 reported upon in a previous volume of the 'Transactions,'* the internal tunics gave way in the same situation as in the present instance. In one of the eight cases also the separation of the coats was as extensive as in this instance, and in two of them the blood also finally escaped into the left pleural cavity.

The first commencement of the symptoms doubtless indicated the time at which the internal rupture occurred, and death ensued when the blood escaped into the left pleura;—the separation of the arterial tunics taking place in the five hours during which the patient survived.

The following are the weight and dimensions of the heart:

Weight, 19 oz. avoirdupois.

Girth of right ventricle:

5 French inches 62 lines = 135 mm. = 5·32 Eng. in.

Girth of left ventricle:

6 French inches 72 lines = 162 mm. = 6·39 Eng. in.

Thickness of walls of right ventricle:

Base	2 lines =	45 mm. =	·17 Eng. in.
Midpoint	2 „ =	45 mm. =	·17 „
Apex	1·5 „ =	3·37 mm. =	·13 „

Thickness of walls of left ventricle:

Base	7 lines =	15·75 mm. =	·62 „
Midpoint	5 „ =	11·25 mm. =	·44 „
Apex	4 „ =	9· mm. =	·35 „

Length of cavity of right ventricle:

54 lines = 121·5 mm. = 4·79 „

Length of cavity of left ventricle:

48 lines = 108· mm. = 4·26 „

Circumference of—

Right auriculo-ventricular aperture	51 lines =	114·75 mm. =	4·52 „
Of pulmonic „	45 „ =	101·25 mm. =	3·99 „
Of left auriculo-ventricular aperture	51 „ =	114·75 mm. =	4·52 „
Of aortic „	36 „ =	81· mm. =	3·19 „

May 5th, 1874.

* Vol. XIV.

10. *Malformation of the heart; atresia of the pulmonary artery; aorta arising from right ventricle; pulmonary circulation maintained through the ductus arteriosus.*

By T. B. Peacock, M.D.

This specimen was sent to Dr. Peacock for exhibition at the Society by Mr. J. P. Purvis, of Greenwich, the case having occurred in the practice of Dr. Purvis, of Blackheath.

The heart was of large size for the age of the subject, and consisted almost entirely of a large ventricle and auricle, which represent the right cavities. Into the auricle the descending and ascending cavæ entered as usual, and the auricle opened into the ventricle by an aperture capable of being closed by a valve having the ordinary tricuspid form. At the upper part and right side of the ventricle the aorta arose, and in front of its origin and below it there was a second opening which led into a small cavity continued in the walls of the right ventricle and which represented the left ventricle. This ventricle was in communication with a small rudimentary left auricle, and the left auricle received the pulmonary veins as usual. The two auricles were separated by a septum in which there was a foramen ovale, which, however, was only capable of being partially closed by the valve, so that blood had evidently passed during life between the two cavities.

The ascending aorta was very large and wide, and was situated further to the right than usual. It gave off the coronary arteries in the usual situation; the arteria innominata also arose naturally, and directly opposite the origin of that vessel; on the under surface of the arch, there was another vessel given off which, though cut across almost immediately after its origin, was evidently the ductus arteriosus. The remainder of the aorta was cut away.

There was no pulmonary artery, but along the under surface of the aorta there ran a fibrous band, which above was in connection with what was evidently the divided continuation of the ductus arteriosus, and below was inserted into the base and left side of the right ventricle. This evidently represented the pulmonary artery. The upper portion where united to the ductus arteriosus was pervious for a short distance, but below that point the rudimentary vessel consisted only

of a small solid cord. The ductus arteriosus was about the size of a crow-quill, and at the point where the rudimentary pulmonary artery united with it, the trunk divided into two vessels, evidently representing the pulmonary branches, distributed to the lungs.

The case was obviously one of imperfect development or obliteration of the pulmonary artery, occurring at an early period of fœtal life, before the septum of the ventricles was completed, so that the aorta retained its connection with the right ventricle, and the pulmonic circulation as well as the systemic was maintained by that vessel. The blood was conveyed to the lungs from the aorta by the ductus arteriosus, returned to the left auricle by the pulmonary veins, and transmitted through the small left ventricle into the right ventricle. From the small size of the ductus arteriosus and pulmonary branches it is possible that some compensatory supply may have been furnished to the lungs from the aorta or one of its branches, but as that vessel was cut away immediately after giving off the arteria innominata, whether this was the case or not could not be ascertained. Certainly from the small size of the left auricle and ventricle but very little blood could have passed through the lungs.

I am indebted to Mr. J. P. Purvis for the following particulars of the case during life:

Herbert Joseph J— was born on April 17th, 1873, and died February 12th, 1874, so that he had lived eleven months less five days.

The first thing that was noticed after its birth was the dark hue of the child, and that it presented with greater or less intensity throughout its life. Occasionally at first, but subsequently at more frequent intervals, it was subject to convulsive attacks in which the countenance became of a very deep blue, almost black, and frequently it seemed as if the child would not live many minutes; it would then gradually recover, and the dark colour would tone down. It would go on thus pretty well for a few days, sometimes for a week, though always cyanotic, when some slight cause, such as eagerness for the breast or being thwarted, would induce another attack. The convulsive attacks occurred at shorter intervals as the child grew older and the teeth began to trouble him. When a fit was impending the child was apparently able to stave it off for a time by making a great effort; and the mother found, that, if once it could succeed in drawing the breast freely, it did not have a fit, and

this might be the case for several days in succession. At times the breath of the child was extremely cold, so much so as to cause considerable pain to the mother whilst suckling it, and she had to cover her breast with a piece of flannel. The child could lie on either side but preferred to be on the left. If laid to sleep on the right it soon awoke; on the lap it was most comfortable on the back. The feet were very long with long toes, the heels projecting backwards; and the hands also were long, somewhat resembling claws.

The child took the breast well and was fairly nourished, but ultimately the strength gave way and it gradually sank.

The autopsy took place forty-eight hours after death. The body was much emaciated and small for the age of the child; it was of a bright purple colour all over, and there was dark purple post-mortem discoloration down the back and the backs of the thighs. All the organs of the body were healthy except the heart. The lungs and heart were carefully removed together, but, unfortunately, the aorta was divided lower down than it should have been.

May 5th, 1874.

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11. *A series of cases of fibroid disease of the heart.*

By C. Hilton Fagge, M.D.

Case 1.—*Extensive fibroid disease of whole of wall of left ventricle and of right fleshy column of mitral walls. Symptoms of dyspnœa and dropsy for only seven weeks before death.*

George B—, æt. 69, came under my care in Guy's Hospital on August 6th, 1873, and died on August 18th.

He stated that his occupation was that of a gardener; he had formerly been a farm bailiff. He had led a temperate life. Five weeks before his admission his breath began to get very short. He had caught no cold, and had no shiverings. About three weeks ago a cough came on, and he spat blood once or twice. His abdomen

began to swell. He could not lie down at night. His legs became swollen. His urine was dark and thick.

He was a tall muscular man. His skin was jaundiced. His legs were very œdematous. His respiration was difficult and hurried, especially when he was in a sitting posture. His heart's action was rapid and feeble. The apex beat was outside the nipple. There was no sign of hypertrophy in the character of the impulse. No bruit was audible. Pulse 95, respiration 34, temperature 100·2°. His urine was albuminous; it was also loaded with lithates.

On the 8th he spat up a great deal of blood. He said that he felt giddy, and was delirious.

On the 9th it is noted that the temperature was 101·3° and the pulse 84.

On the 16th the extremities were cold; the heart's action is again noted to have been feeble.

There was much discussion about the state of the heart, but no definite conclusion was arrived at.

I made a *post-mortem* examination on August 18th.

There was considerable dropsy of the legs, abdomen, scrotum, &c.; none of the hands or arms.

The head was not examined.

The right pleura contained a considerable quantity of fluid, which compressed the lower part of the lung and rendered it airless. Both lungs contained immense apoplectic masses. The whole of the right lower lobe above the compressed part was converted into a substance like damson cheese, and so was the greater part of the left lower lobe; and there were scattered patches in the upper lobes. Branches of the pulmonary artery were plugged by ante-mortem coagula.

The heart weighed 22 oz. The right cavities were much dilated, as also was the pulmonary artery. The left ventricle was dilated and hypertrophied; its wall measured three quarters of an inch in thickness at its base anteriorly. The mitral valve was quite healthy. Its left fleshy column was free from fibroid change, but its right column was extremely wasted, and, like the whole posterior wall of the ventricle, it was of a uniform yellow colour, contrasting strongly with the appearance of the rest of the interior of the ventricle. On section the posterior wall of the ventricle was found to be extremely thin, measuring only a quarter of an inch across; and the greater part was formed, not by muscle, but by white fibrous

tissue. This occurred partly in the form of bands, interspersed between the muscular fasciculi, and partly in that of a uniform plate of greyish-green colour and of gristly hardness, which lay imbedded in the wall of the ventricle, rather nearer to its inner than to its outer surface, but with a layer of muscle between it and the endocardium. The lining membrane of this part of the ventricle was thickened, so that the interspaces between the carneæ columnæ, when cut across, looked like the gaping mouths of vessels.

Both the left ventricle and the left auricle contained masses of ante-mortem coagula.

The aortic valves sustained a column of blood perfectly. They were healthy, except that the adjacent edges of the two anterior ones were adherent.

The arch of the aorta contained a calcareous plate in its concavity.

The liver weighed 54 oz.; its tissue was nutmegged.

The spleen weighed 8 oz.; its surface was healthy, but firm and hard.

The kidneys weighed 14 oz.; they were congested and rather soft; but they appeared to be pretty healthy.

The testes were healthy. There was no evidence of syphilis in the body.

A portion of the diseased part of the heart's wall was hardened in chromic acid and examined very carefully. This showed bands of wavy fibrous tissue, which in some places had muscular fibres interspersed among them. In other places it formed a uniform substance, without any trace of the natural tissue. When a thin section of this was examined in glycerine it appeared semitranslucent and homogeneous, except that there were little interspaces in it containing minute granules. No indications of the earlier steps in the development of fibrous tissue were discoverable. A few rather large blood-vessels were contained in the morbid growth, the walls of which were very thin; indeed so thin as to be scarcely perceptible.

CASE 2.—*Fibroid disease of apex and anterior part of septum of heart; rapid death, with no previous cardiac symptoms.*

James S—, æt. 85, was brought into Guy's Hospital on October 29th, 1873, at 3 p.m., under the care of Dr. Habershon, who has

kindly allowed me to publish the case. He had left his home at Peckham at 11 a.m. that morning, to go into the city. There was a very thick fog, and when he got into it at London Bridge he became cold and faint and his breathing difficult. However, he got as far as the Royal Exchange, but there fell down insensible and was taken to the hospital.

He was a fine-looking old man, and he was said to have been living in comfortable circumstances. He was quite sensible when admitted, and said that he felt very cold and weak, and as though he should die. His pupils were fully dilated. The surface of his body was intensely cold. He did not shiver. Pulse 30, respiration 40. There was no paralysis of any of his limbs.

He was put into bed, and warmth and stimulants were freely employed; but he seemed incapable of rallying, and died at 5 p.m. An old friend of his, who came with him to the hospital, said that for the last few years he had had excellent health, and that he had never had had any similar attack.

I made a *post-mortem* examination on October 30th. The body was that of a spare old man, with white hair and beard.

The brain weighed 50 oz.; it appeared to be quite healthy.

The lungs were collapsed and remarkably dry. There was a little emphysema of their anterior edges, but with this exception they were shrivelled, and flaccid, and doughy. When cut away from the heart the two weighed 32 oz. Their appearance was just like that of the lungs in cases of cholera.

The heart weighed $10\frac{1}{2}$ oz.; it was of natural size and form. The right cavities, the heart, and main branches of the pulmonary artery, all contained a little watery blood.

Towards the apex of the left ventricle, and especially in the anterior part of the septum, there was advanced fibroid growth; a semitransparent fibrous material, in bands and meshes, taking the place of the muscular substance.

The microscopical characters of the diseased part in this case were identical with those in Case 1.

The liver was united to adjacent parts by numerous adhesions, especially about the gall-bladder. The gall-bladder itself was contracted and divided into two chambers, each of which contained a round facetted gall-stone the size of a large marble. These stones were friable, and consisted chiefly of black or yellow pigment, with but little evident cholesterine. The cystic duct could not be

traced. The hepatic duct was dilated; all the ducts throughout the liver were wider than natural, approaching in size that of the corresponding branches of the portal vein.

The kidneys weighed 10½ oz.; their surfaces were decidedly granular, and the cortex of each was somewhat wasted. The arteries in them were very rigid.

CASE 3.—*Fibroid disease of the ventricles; pericarditis; symptoms of obstruction to the circulation, dropsy, &c.*

M—, æt. 28, was admitted into Addison ward on October 1st, 1873, while I had charge of the patients in Dr. Habershon's absence. Subsequently she came under his care.

She said that she had never had rheumatism. In the previous January she had caught cold, while menstruating, and from that time the catamenia had been absent. In May she lost the use of her right arm and leg, but got better in three or four weeks. Two weeks ago she noticed that her left foot began to swell; the swelling extended up to the knee; a week later the right foot also became swollen.

She was a well-nourished woman, with a slightly congested face; the respiration was laboured. The left side of the chest did not expand so well as the right, but the right side was the duller of the two on percussion in the back. The heart's apex beat was between the fifth and sixth ribs, but outside the nipple. There was a systolic murmur, loudest at the apex and at the angle of the scapula; and at the base a diastolic murmur was audible. The temperature was 99·4°, pulse 108, respiration 32. The urine was of sp. gr. 1010, pale, straw coloured; it contained albumen and a few slightly granular casts.

On October 6th it is noted that there was great dyspnœa. On October 13th, the double bruits were distinct. She was much weaker. On the 16th a pericardial rub was heard at the base.

She died on December 17th, 1873. I have no further notes of her symptoms.

The *post-mortem* examination was made by Dr. Goodhart. The body was fairly nourished, and looked like that of a woman ten years older than her stated age. The hair was dark. There was much dropsy of the legs.

The brain weighed 43 oz.; it appeared to be quite healthy. There was no plugging of any of the vessels; the middle cerebral

arteries were atheromatous, but the basilar was good. No cause for the attack of hæmoptysis could be discovered.

The right pleura was thick and contracted, so that the lung had rounded edges, and was reduced in size and much altered in shape. There was also some recent inflammation; the base of the lung had fresh lymph upon it, and there was a good deal of fluid. The left pleural sac was closed by old "cellular" adhesions. The lungs themselves were crepitant; their tissue was tough, but it was everywhere very œdematous. The large bronchial tubes were full of muco-purulent secretion; the small ones contained a frothy fluid. The mucous membrane of all the air-passages was injected.

The heart weighed 23 oz.; its form was normal. The pericardial sac contained an ounce or two of serum, of the colour of port wine. Its surface was ragged all over, and in part adherent from a thick layer of recent lymph. This layer was everywhere quite distinct from the muscle beneath.

The right chambers of the heart contained a little clot. The right ventricle was very thick; the septum bulged into it from the left side, so as to narrow its cavity. The valves were healthy. The pulmonary artery was normal.

The mitral valve was small and its edge thick. The orifice would just admit three finger tips. The play of the anterior curtain had evidently been impaired, for it had a thick edge, and its chordæ were thick and long. Its musculi papillares were very thick and rigid; and on section they were found to contain extensive white patches of fibrous material, reaching from their apices down to their origin from the ventricular wall.

The aortic valves were found to be competent when tested by a stream of water. They were slightly thicker than natural, particularly the central one. No cause could be discovered for the diastolic murmur that had been noticed during life.

The muscular substance of both sides of the heart was in the same condition. All the cavities were much hypertrophied. On the endocardial surface there was no indication of any morbid condition of the muscle; nor in a vertical section could it be seen that there had been any extension of inflammation into it from the pericardium. But the substance of the heart was exceedingly tough to cut; its cut surface was notably paler than usual, and on carefully looking at it one could see that it was faintly mottled with still paler grey dots. The left cavity was not dilated,

but its apex was very thin; and the fat in the pericardium there formed a thickish layer one line and a half in diameter.

Under the microscope the muscular fibres were found in some parts to be quite natural. But by far the larger number of them showed a very indistinct striation; or this was altogether obliterated. Indeed, they looked more like wavy fibres than muscular bundles. In other places, again, a tough connective tissue matted the muscular fibres together.

The ascending aorta was a little atheromatous. The arch and thoracic aorta were pretty healthy. The abdominal aorta was very bad, presenting much soft atheroma. The arteries of the upper limbs were good; the femorals were atheromatous.

The liver was adherent to the diaphragm by old peritonitis. It weighed 58 oz., and was quite healthy, except that its capsule was a little thick and its anterior edge rounded. The spleen weighed 9 oz.; it was firm, not lardaceous.

The kidneys weighed 7½ oz.; they were granular, some parts being dark red and contracted, and other parts forming small opaque yellow tubercles. The cortex was much wasted, but not tough. Microscopically the structure was confused. No excess of fibre was seen, but the interstitial connective tissue was full of young nuclei, and in large tracts had undergone shrinking, as was evident from the crowding together of the tubules, and from the coherent masses of epithelium that they contained.

The ovaries and fallopian tubes were all matted together, and convoluted.

CASE 4.—*Fibroid disease and peculiar degeneration of posterior wall of left ventricle; local pericarditis over a patch of softened muscular tissue; no cardiac symptoms; gangrene of foot from disease of arteries; bedsores; suppuration of kidney; pneumonia; death by gradual asthenia.*

James C—, æt. 55, was admitted under the care of Mr. Bryant, on December 12th, 1873, for gangrene of the right foot.

He said that he had always been healthy; he had been a hard drinker. Six weeks before his admission he had begun to suffer from weakness of the ankles and became unable to walk; he also felt giddy in his head as if drunk. His feet became cold, and

he noticed some black patches on his toes. Some blisters appeared, which broke. His right foot became black all over, and he had a stabbing pain in it.

He had never had any venereal disease.

His right foot was black and rather moist. The discoloration extended to just above the ankle. Both feet were extremely cold. Pulse 80, weak.

Afterwards bedsores formed upon the right buttock. He died on January 24th, the temperature of the body having been falling gradually for some days previously. On the 16th it was 102°; on the 20th, 99·4°; on the 21st, 98·6°; on the 23rd, 96°.

I made a *post-mortem* examination. The right leg and foot were then gangrenous half way up to the knee. The cuticle was peeling off the mortified parts. On cutting into them they appeared rather moist and soft, but shrivelled.

The brain was not examined.

The lower lobe of the right lung was universally in a state of grey hepatization, and the pleura over it was also the seat of recent inflammation. The upper part of this lung was soft and partially œdematous. There was no indication that the pneumonia was of pyæmic origin. The left lung was quite healthy.

The heart weighed 13 oz. Upon the posterior surface of the left ventricle there was a patch of lymph of about the size of half a crown, and the two surfaces of the pericardium were commencing to adhere at that spot. The surface of the heart looked discoloured; and on cutting into it a slight irregular cavity was seen. At first it appeared doubtful whether this was not of a pyæmic character. But it soon became evident that it was connected with the presence of fibroid growth in the posterior wall of the left ventricle. This was most marked at the apex, where a dense white fibrous tissue formed nearly the whole thickness of the ventricular wall. Here the appearance was quite that which ordinarily characterises this form of disease. But throughout the rest of the posterior wall there was a very different condition. The muscle contained an opaque substance of a curious greenish or greenish-brown tint, which had a texture more like that of washleather than anything else, and gave one the idea of its being a tissue in a state of degeneration. At one part this greenish substance formed a thin flat layer, embedded in the muscular substance, and appearing as a narrow sinuous line in a vertical section of it. The right musculus papillaris of the mitral valve was

entirely converted into this peculiar tough-looking greenish material. Yet the endocardium over it looked quite healthy.

Under the microscope the white fibroid material from the heart's apex presented the usual appearances, bands of perfectly developed fibrous tissue separating the muscular fibres, most of which exhibited but slight striation, or were even fattily degenerated.

The greenish-brown substance in the posterior wall of the ventricle and in the fleshy column of the mitral valve had very different microscopical characters. Although to the naked eye it looked entirely unlike the ordinary muscular substance of the heart, it yet proved to consist entirely of muscular tissue, most of which presented good striation, and which showed remarkably well the branching and reuniting of the fibres. I did not see a trace of any nuclear or fibroid growth, although I examined many specimens.

Both femoral arteries were extremely diseased; they were calcified and inelastic; and their calibre was somewhat narrowed. The right one was plugged with softening thrombus just up to the point where the profunda came off, but no higher. Evidently this plugging occurred subsequently to the arrest of circulation in the artery.

The right femoral vein was plugged with softening thrombus. I omitted to observe the upper limit of this; but it did not extend into the inferior vena cava.

The intestines were healthy.

The liver was marked by a groove due to pressure; it weighed 64½ oz. It presented no indication of syphilis.

The spleen weighed 11 oz.; its tissue was soft, and some patches of it were of a darker colour than the rest.

The kidneys weighed 12 oz. The left one was simply cystic. The right was full of abscesses. These looked more like those which are found in cases of pyæmia than those which occur in ascending nephritis. They did not follow the lines of the pyramids of Ferrein; many of them were of irregular form, each consisting of a central reddish-yellow substance, surrounded by a yellow border. The pelvis of the right kidney looked quite healthy. The ureter and bladder were also healthy.

Case 5.—*Extensive fibroid disease of left ventricle; multiple aneurysms, tunnelling the wall of the heart; adherent pericardium; symptoms of cardiac dropsy, of no great severity;*

patient under treatment in a surgical ward for scrofulous disease of cervical glands at time of her death.

Hannah H—, æt. 30, was admitted into Guy's Hospital, under the care of Mr. Durham, in January, 1874, on account of an enlargement of the glands of the neck and axilla, which were suppurating.

She was a married woman, but had had no children. She had never had good health. When a child she had had an abscess in the neck.

About a year previously she had struck her chest against the ballusters of a stair. Soon after this a swelling appeared in the upper part of the left breast, two or three inches below the middle of the clavicle. This gradually extended into the left axilla.

On admission the glands on the right side of the neck were slightly enlarged, and they were suppurating. The glands on the left side of the neck were indurated, and those in the axilla likewise. The left breast was large and dense.

The heart's action was heaving. There was a loud bruit, of doubtful presystolic rhythm, below and inside the left nipple. The liver was tender on palpation. The legs were œdematous. The temperature was 97·6°; the pulse 122.

January 26th.—The glands on the right side of the neck discharged a good deal. An incision three inches long was made in the neck.

She died, and I made a *post-mortem* examination on February 12th.

The body was moderately wasted.

On the right side of the neck, below the middle of the posterior triangular space, there was an open sore, the surface of which looked dry. Its edges were not much thickened. On dissecting the parts beneath, I found that the connective tissue round the right sterno-mastoid muscle was indurated. The glands were not particularly enlarged, not being bigger than beans; but a great number of them were caseous in their centres, and these caseous parts were in many of them separating from the peripheral portions of the glands, forming, as it were, sloughs or sequestra. This condition extended along the spinal column upwards towards the basis cranii, and also more superficially to just inside the angle of the lower jaw, where there was an open suppurating cavity round some diseased glands.

A similar state of the glands existed on the left side of the neck

but round these there was no suppuration or ulceration. The axillary glands were caseous. The mediastinal glands, as low as the pericardium, were also affected in the same way. On the other hand, the glands at the roots of the lungs were simply calcified and pigmented, or, in other words, they were the seat of obsolete disease.

In the abdomen the recent affection of the glands reappeared. At the portal fissure they were enormously enlarged and cheesy; one was an inch and a half long.

The lungs were healthy except that they were somewhat œdematous.

The heart was much enlarged, weighing 25 oz. The lungs were adherent over it, especially the left lung, which could not be separated.

The pericardium was universally adherent, but by using some force one could detach the parietal layer from the surface of the whole of the right side of the heart, and this surface then appeared smooth, and the membrane covering it looked thin and natural. But over the left side of the organ, especially towards the back, the pericardium was so firmly adherent that it could not be separated. A hard dense mass could be felt in this position, the nature of which could not be determined.

The left ventricle was therefore laid open, when a most extraordinary condition was discovered.

The ventricle formed a large broad chamber, with the mitral valve at its back; behind this, again, was a second wide space, so that the valve was, as it were, stretched transversely across an elongated cavity, itself directed backwards and to the left.

In front the muscular substance of the ventricle was, for the most part, healthy, but towards the base its wall was made up of a tough mass of white fibrous tissue, the thickness of which was such as would correspond with that of a muscular wall, hypertrophied to an extent proportionate with the dilatation of the chamber. The back of the ventricle had its fleshy structure almost universally destroyed. This was replaced in part by a fibrous material of almost cartilaginous hardness. A very large part, however, of the wall was occupied by a number of rounded cavities, forming most remarkable examples of "aneurysm of the heart" (Pl. V, fig. 2). All of them communicated with the interior of the ventricle through comparatively small apertures, situated between the carneæ columnæ. One of them was as big as a walnut; another was of the size of a large

DESCRIPTION OF PLATE V.

Fig. 1 illustrates Dr. Morell Mackenzie's case of Papillomatous Web uniting the Vocal Cords. (Page 35.)

Fig. 2 illustrates Dr. Hilton Fagge's paper on Fibroid Degeneration of the Heart. (Page 64.)

Fig. 2 represents the left ventricle of the heart in Case 5. It is laid completely open, so as to expose, not only an extensive section of its walls, but also its cavity. In order that as many of the aneurysmal cavities as possible may be shown the artist has placed it in an unusual position, and allowed its wall to fall inwards in one place in such a way that its appearance must be confessed to be puzzling. It is hoped, however, that the following references may remove all difficulties.

a, a. Are the cut surfaces of the anterior wall of the ventricle.

b, b. Are the cut surfaces of the posterior wall.

c, c. Represent approximatively the position of the apex of the heart.

d. Is the left pillar of the mitral valve.

e. Is the orifice of the mitral, through which the cavity of the left auricle is seen.

f. Is an aortic valve.

g. Is the interior of the aorta (the character of which has been misrepresented by the artist).

At *a, a* the wall of the ventricle is seen to consist of healthy muscular tissue; at *b, b* this is replaced by dense fibrous tissue.

h, h, h, h. Are aneurysmal cavities exposed in the cut surface of the wall of the heart; some of them contain clots.

i, i. Are aneurysmal cavities opening into the interior of the ventricle.

Fig. 1.

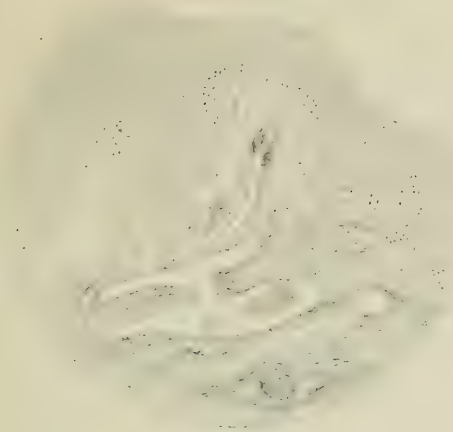
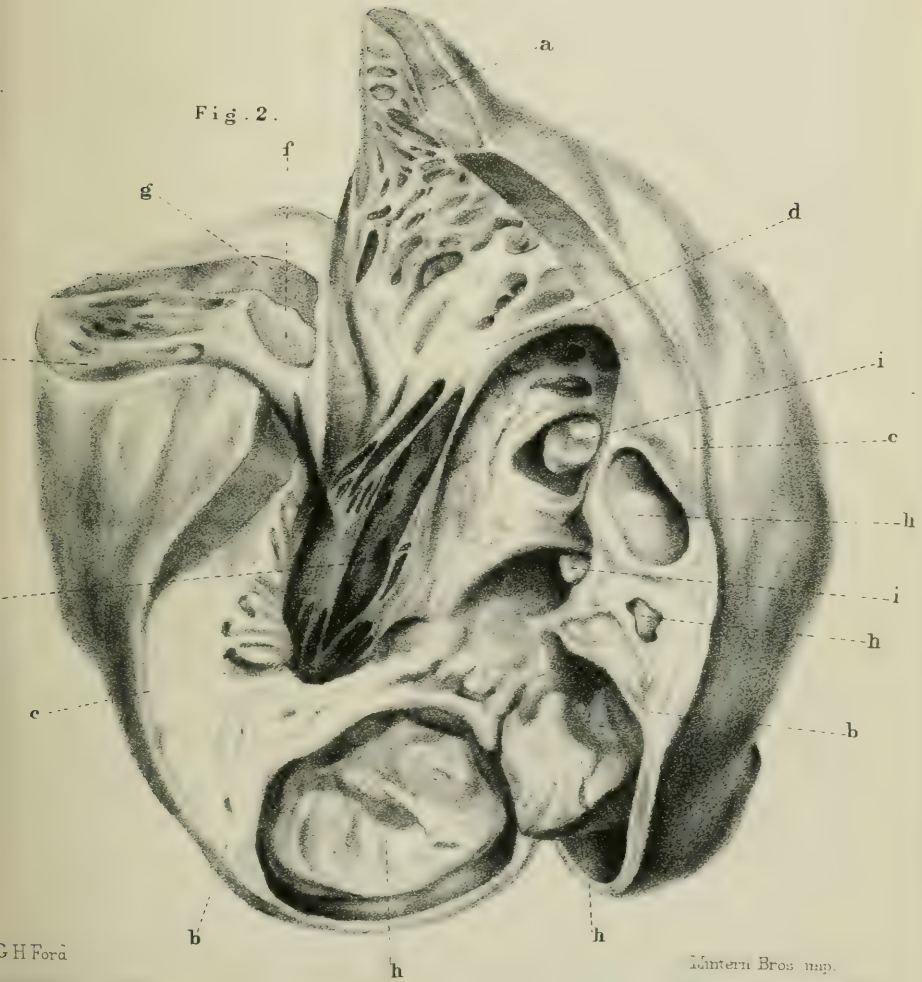


Fig. 2.



marble; and one other ran horizontally through the substance of the ventricular wall, forming a tunnel of considerable length. It was difficult to say how many of these aneurysms were contained in the parietes of the ventricle. Some of them were empty, or contained only loose clot; others were filled with a firm gelatinous substance, of a greenish colour, translucent, with flakes of whitish curdy material, evidently degenerating. This was apparently old and altered coagulum; in some places it could be very easily shelled out of the cavities themselves. These were then seen to be separated from the surface of the heart only by a thin substance, which, in fact, consisted of little more than the visceral layer of the pericardium, indurated and partially calcified. In other places the gelatinous substance above described was inseparably connected with the fibroid tissue forming the ventricular wall. The one, in fact, appeared to pass into the other, so that it seemed as though there was a peculiar gelatiniform degeneration of the heart's substance. The substance of the heart towards its base was quite an inch thick. The endocardium over the affected part of the ventricular wall was greatly indurated and of a white colour, and so was the whole thickness of those carneæ columnæ which bounded the openings into the aneurysmal cavities. Other parts of the lining of the ventricle were also opaque and fibroid, although the muscular tissue beneath was healthy. This was the case, for instance, on the left side of the septum.

In the posterior part of the chamber the wall of the heart was almost entirely replaced by adventitious tissue.

The microscopical characters of the affected parts were carefully studied. I shall have occasion to refer to them fully lower down, in speaking of the disease generally.

The other chambers of the heart and all the valves were healthy.

The coronary arteries were traced along both surfaces of the heart. They were of full size and their walls were good. But they ran in places through dense tissue, and were drawn up in the line of their length so as to be slightly pouched or tortuous.

The liver weighed 75 oz.; its tissue was coarse and fatty.

The spleen weighed 6 oz. It contained numerous scattered tubercles, the size of millet seeds, yellow or caseous.

The kidneys were a little uneven on the surface, but appeared to be healthy.

The toe-joints were free from any gouty deposits.

CASE 6.—*Fibroid disease, affecting a very small part of the heart's apex and septum; sudden death.*

William M—, æt. 44, was brought into Guy's Hospital dead on February 23rd, 1874. He had fallen down while wheeling a barrow in the street, and died before he could be got to the hospital.

I made a *post-mortem* examination on the following day. The brain appeared perfectly healthy; it weighed 51 oz. The larynx was free of obstruction. The lungs were healthy. The pulmonary artery was empty.

The heart weighed 16 oz.; its valves were all healthy. On cutting into its substance I discovered no morbid change until at the apex I found a small area affected with fibroid disease, whitish bands lying interspersed between the muscular fibres. This was perfectly definite and well marked, but it would certainly have been overlooked had not extreme care been taken in slicing up the wall of the heart. There was nothing, on either surface of the ventricle, to indicate that the muscular tissue beneath was otherwise than healthy. I afterwards found that there were two small fibroid patches in the septum, one of which lay beneath a white spot in the endocardial lining of the left ventricle.

The convexity of the aorta was the subject of arteritis deformans, but not in an extreme degree.

The liver weighed 69 oz.; its tissue seemed healthy. The spleen weighed 7 oz.; it appeared to be normal, but the Malpighian corpuscles in it were very distinct. The kidneys weighed 13 oz. and were healthy.

CASE 7.—*Fibroid disease affecting posterior wall of heart; aortic stenosis; symptoms of cardiac disease during life subordinate to those of cancer of the left kidney, for which he was a patient in the hospital; death gradual.*

John C—, æt. 66, was admitted into Guy's Hospital under the care of Dr. Moxon, on December 17th, 1873, for hæmaturia. He had suffered from the same complaint for the first time twenty years before. He admitted that he had drunk freely. He was also constantly exposed to wet. He had had rheumatic fever when fourteen years old, and again at the age of twenty-eight.

In 1872, at Christmas, after travelling all day in the wet, he was attacked with dyspnœa and oppression in the region of the heart, and cough. Afterwards he became troubled with shortness of breath. He came into the hospital in April, 1873. His urine sometimes contained blood, sometimes not. A loud systolic bruit was then observed; this was loudest at the base; it could be heard at the apex, but not in the axilla. He was discharged on May 14th.

On December 17th, 1873, as already stated, he was again admitted. He then stated that the hæmaturia had increased for five weeks past. He complained of pains in the abdomen, left side, and back. There was a rounded swelling in the left loin and hypochondrium. Pulse 82; temperature 98°; respiration 16. The basic systolic murmur was very loud, and it was regarded as due to aortic stenosis. The sphygmographic tracings of the radial pulse showed that the artery bore a high pressure, 8 oz. as well as 6 oz. The tidal wave was very marked; the dicrotic wave fairly so. He sank gradually and died on February 27th, 1874.

I made a *post-mortem* examination. The brain was not examined. The right lung was atrophied; and the pleura over it was greatly thickened, and the organ so puckered that its lower part was converted into a rounded mass.

The heart weighed 13½ oz. There was very marked hypertrophy, without any dilatation, of the left ventricle. The valves of the right side were healthy. The mitral valve had its edge decidedly thickened by old disease. However, there was no reason for doubting that it was competent to close the orifice. Its chordæ were very thick and massive. The aortic valves were united into a mass, with an irregularly triangular orifice, into which it was just possible to introduce the tip of one's finger. The edge of the united segments was nodular and thickened; but it was smooth, the disease being evidently quite old. There were, however, some soft and quite recent vegetations in the little angles or corners of the orifice. The mitral valve was tested and appeared to be competent.

The muscular wall of the left ventricle was affected with well-marked fibroid disease, especially its back part. The new material was scattered in small masses; most of them did not correspond with any opaque spot on either surface of the ventricle, but one of them was directly in connection with a small round opaque spot on

the visceral layer of pericardium covering the posterior wall of the heart. It may be noted that the amount of fibroid substance was far greater in this case than in Case 6, which had occurred a few days previously.

There was some arteritis deformans about the concavity of the arch of the aorta, and also about the mouths of its three large branches.

The liver was small, pale, and hard looking, but not obviously cirrhosed nor yet fatty. There was no reaction with iodine. Some fibrous bands united it with the diaphragm, the result of an old perihepatitis. The spleen weighed 5 oz.; it was adherent to the adjacent organs. Its capsule was in part greatly thickened and of an opaque whitish-yellow colour.

The state of the left kidney was very remarkable and interesting, but I will omit the detailed description of it here, as it appears to have no bearing on the disease of the heart. It formed a flattened tumour. The lower part of this was cystic, being divided into two chambers, from which a considerable quantity of dirty reddish-brown purulent urine escaped, causing the swelling to collapse entirely. Its upper part consisted of a solid and rather firm whitish growth, infiltrating the structures to the inner side of the kidney towards the spine, so that at one point the aorta was completely embedded in it. Microscopically, this proved to be a true carcinoma, consisting of masses of epithelioid cells arranged in well-formed alveoli. After removal it was seen that the cystic part of the tumour was simply an ordinary sacculated kidney. The secreting tissue of the organ had entirely disappeared, but there were rounded cavities representing the original calices. The carcinomatous growth was spreading into some of the septa between these cavities, and it also formed fungating masses, protruding into the interior of the cavities themselves. The left ureter was of normal size, and opened into the pelvis of the kidney by a small orifice. The bladder was healthy. The prostate had a soft "third lobe," the size of a bean, projecting into the floor of the bladder. The right ureter was of normal size up to the pelvis of the kidney, where it became expanded into a flaccid pouch that would have held a bantam's egg. But within the right kidney the pelvis and calices were but little, if at all, dilated. The right kidney was elongated, and had, doubtless, undergone compensatory hypertrophy. However, its surface was flattened, and I doubted whether it was heavier than natural,

for its tissue was in an advanced stage of contracting disease. Its surface was uneven, and presented many cysts. The arteries in it were thick and like quills. No indication of calculus existed in either kidney.

CASE 8.—*Extensive fibroid disease of posterior wall of left ventricle; adherent pericardium; history of rheumatic fever; symptoms those of cardiac dropsy, &c.*

J. C—, æt. 42, was admitted into Guy's Hospital on March 4th, 1874, under the care of Dr. Taylor, who has kindly allowed me to publish the case.

He stated that he was married and had four children. He had had rheumatic fever nineteen years before; he was then laid up for five weeks. The legs and knees were the parts especially affected. He had been in the habit of drinking five or six pints of beer daily, but not much spirits. He was accustomed to work hard in the "iron trade."

About six weeks before Christmas, 1873, he had noticed that his breath was getting short, especially when he was walking home from his work, a distance of one mile and a half up hill. He was then often obliged to stop to get breath. A month ago he was compelled, on account of his difficulty of breathing, to give up work altogether. Ten days ago his legs began to swell.

He was a thin-looking man, with a red flush on each cheek. The lips were of their natural colour. The tongue was normal. The nails were of natural form. The position which he was obliged to take was that of half sitting up in bed. He could not lie on his side. His conjunctivæ were slightly œdematous. His legs were much swollen, pitting deeply on pressure.

The apex beat of the heart was in the fifth intercostal space, one inch and a half to the left of the nipple. The sounds at the base were feeble, but the heart's action was rather violent. There was a systolic murmur at the apex, less distinct towards the base.

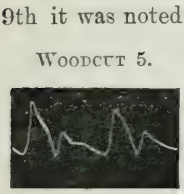
The breathing was harsh over the right lung. At both bases posteriorly there was impaired resonance and deficient breath sound. The liver dulness extended for two inches below the costal cartilages. The urine was scanty and highly albuminous.

He was ordered ten minims of tincture of digitalis, and ten minims

of tincture of squills, with some liquor ammoniæ acetatis, three times daily, and a half drachm of pulvis jalapæ compositus, which produced four evacuations.

On the 5th he expectorated a quantity of viscid sputa streaked with blood. Some purpuric spots appeared on his legs. On the 9th it was noted that his breathing was better. On the 11th there was less albumen in the urine. His appetite was good. His breathing was almost normal during the day, but his nights were bad.

Woodcut 5.



The accompanying sphygmographic tracing of his pulse was taken on March 12th.

The pressure used was $1\frac{1}{2}$ oz.

On the 14th he was ordered to take the tincture of digitalis in ♏v doses with mistura senegæ every four hours. On the 18th the pulse was 38. The medicine was then changed to ♏xv of tinct. camph. comp. in mist. camph. three times a day. On the 19th the pulse was 44, very irregular. On the 21st it was 50, and very irregular. On the 23rd it was 42, and very weak and irregular.

The urine continued to be very albuminous. It was generally of high specific gravity, from 1020 to 1040 ; it was scanty, about 8 oz. in twenty-four hours, and loaded with lithates. The anasarca remained undiminished.

On the 21st he was ordered to take mist. copaibæ resinæ ter die.

On the 25th the pulse was 60, irregular. On the 27th it was 56, much more regular.

On April 1st it was noted by Dr. Taylor that he was much thinner. The dropsy was still considerable. There was less distress of breathing. There were signs of effusion into the base of the chest on each side. The urine was increased in quantity, amounting to 26 oz., and there was much less albumen in it.

April 2nd.—Patient is very restless during the night, so that he keeps jumping out of bed and gasping for breath. Pulse 60. The right arm is now very œdematous.

He died at 8.30 a.m. on April 8th, having been in great distress for some time previously on account of the difficulty of breathing.

I made a *post-mortem* examination on April 8th. There was considerable dropsy.

The brain was not examined.

Both lungs were in a state of brown induration. In the inferior angle of the right lung, at its back, there was some pulmonary apoplexy. Several branches of the pulmonary artery were found to be plugged with firm, non-adherent, partly decolourised coagula. These had rounded extremities, were caught on the points of bifurcation of the vessels, and exactly resembled other coagula which lay loose in the prostatic veins. Thus they appeared clearly to be embola. Their distribution in the branches of the pulmonary artery, however, by no means corresponded exactly with the part of the lung affected with apoplexy.

The heart was enormously enlarged. Its weight was 34 oz.

The two surfaces of the pericardium were universally adherent by old connective tissue, and I had to use some force to separate them. There was, however, no thickening, and probably the adhesions did not interfere much with the heart's movements.

The right chambers were healthy.

The left ventricle was very greatly dilated, but its walls were not proportionately thickened. The augmentation in its size was mainly due to an increase in the antero-posterior diameter of the left ventricle. A foot rule, passed into the chamber through an incision in the anterior wall, did not impinge on the posterior wall until a length of five inches had entered the ventricle. The septum was greatly increased in breadth, and the mitral valve lay at the back of the cavity. The mitral orifice was not very wide, admitting not much more than three fingers. Its lower edge and its chordæ were thickened. There was recent inflammation of its auricular edge, which had upon it a few fine vegetations. The valve was tested, and appeared to be competent, so far as this can be determined by post-mortem observation. The regurgitation, which had, no doubt, occurred during life, was probably due to the impairment of the contractile power of the ventricle, caused by the fact that a considerable part of its posterior wall was converted into a tough, white, tendinous tissue. This state did not extend either into the substance of the right ventricle, nor into the septum, nor into the musculi papillares, nor into the apex of the heart. The affected part of the wall of the left ventricle felt thin and hard. The bands and streaks of white fibrous tissue lay interspersed between the muscular fibres. The pericardium covering this part of the heart's surface was somewhat more opaque than elsewhere, but there was no indication that the fibroid change had extended inwards from

that surface. The corresponding part of the endocardium was also rather opaque, but there appeared to be no ground for the supposition that this had been the starting-point of the disease.

The aortic valves were healthy. The aorta itself was very thick, and its inner surface very irregular.

The stomach was much congested.

The liver was nutmegged.

The spleen was of moderate size, very firm, and hard.

The kidneys were very uneven on the surface, and mottled, and appeared to be evidently affected with advanced (fatty) epithelial nephritis, besides being indurated as a result of the heart disease.

CASE 9.—*Very slight fibroid disease of left ventricle at its apex; dilatation and hypertrophy of the heart; symptoms of cardiac dropsy.*

Benjamin C—, æt. 40, was admitted into Guy's Hospital on June 5th, 1874, under the care of Dr. Habershon, who has kindly allowed me to report the case.

He said that he had always been temperate, and had served nine years as a soldier in India. About a year previous to his admission he had had a cold and cough, of which he got better, but he afterwards began to suffer from shortness of breath, tightness across the chest, and pain at the pit of the stomach. He was in the hospital at Dover for two months, suffering from bronchitis, and at the end of this he was discharged from the service. Three weeks back he fell ill again.

On auscultation it was found that there was no bruit, but the two sounds of the heart at the apex were feeble and of equal duration. There was an undulating shock in the epigastrium. Pulse 104. Respiration 32. Temperature 96·8. The liver was enlarged. The urine was slightly albuminous. The legs were œdematous, this condition extending up as high as the lower thirds of the thighs.

The symptoms became more severe after his admission. On the 9th it is noted that the dyspnœa was greatly increased. He was spitting blood; his extremities were cold. The pulse was rapid, irregular, and too feeble to be counted.

He shortly afterwards died.

I made a *post-mortem* examination on June 11th.

There was considerable dropsy of the legs.

The brain was healthy; it weighed 47 oz.

The surface of each lung presented patches of recent inflammatory lymph, corresponding with the situation of several large apoplectic masses which existed in both organs. These masses, which were wedge-shaped, occupied the extreme inferior and posterior angle of each lung, and also the anterior edge of the middle lobe of the left lung. There was very obvious plugging of arteries, of considerable size, going to each apoplectic mass. The clots by which these arteries were obstructed were mostly rounded, firm and hard, and partially decolourised, and in at least two instances it was evident that they had been carried into the vessels in which they lay, and had been caught upon their points of bifurcation. Most of these embola were quite loose, but one had some recent reddish-black coagulum upon it, and was adherent. The branches of the pulmonary artery were not distinctly atheromatous, but their lining membrane was slightly mottled with yellowish patches.

The heart weighed 23 oz. It was exceedingly rounded in form, so that, in fact, it had no apex. Its diameter was roughly measured at six inches transversely and only five inches vertically (from base to apex).

The right cavities were much dilated; they contained black post-mortem, but no ante-mortem coagula. The tricuspid valve would have allowed more than five fingers to pass.

The left ventricle was greatly enlarged and of a peculiar shape, resembling that which I observed in several of the cases of fibroid disease of the heart which are recorded in this paper. The peculiarity to which I refer was its great depth in an antero-posterior direction. Its substance generally was massive, but at the apex it was extremely thin. The muscular tissue showed no sign of fatty degeneration. Just at the apex of the left ventricle there was a single nodule of fibroid tissue, of about the size of a pea, not very sharply defined, but of the usual whitish-yellow colour. There was no indication of its presence on either surface of the ventricle. Behind it there was another small whitish mass, which, perhaps, was also a fibroid growth, but I thought it was simply a little fibrous sheath accompanying a blood-vessel.

The mitral valve was little, if at all, wider than natural. Its lower edge was thickened, but there was no indication of its having

allowed regurgitation to take place through the orifice. The aortic valves were healthy. The base of the aorta was atheromatous, and had some plates of calcareous deposit. The descending aorta was healthy.

The femoral veins contained only post-mortem coagula. The prostatic veins had partially decolourised ante-mortem coagula, exactly resembling those which were found impacted in the branches of the pulmonary artery.

The stomach had its mucous membrane reddened and lined with mucus.

The liver weighed 53 oz. Its tissue was nutmegged.

The spleen weighed 4 oz. Its substance was firm and hard; there was a single small infarctus in its edge.

The kidneys were indurated, and their cut surface was glistening; but their tissue appeared to be healthy. They weighed 10 oz. One of them contained a single infarctus.

The testes were healthy. There was no evidence of syphilis in any of the organs.

Case 10.—*Extensive fibroid disease of left ventricle, extending into the septum, causing aneurysmal yielding of its wall; symptoms those of cardiac dropsy; death sudden.*

Alfred B—, æt. 43, was admitted into Guy's Hospital, on June 13th, 1874, under the care of Dr. Pavy, who readily accorded to me permission to publish the case.

The first previous illness of which he gave any account was an attack of "cholera" in August, 1873. He recovered perfectly from this, but in the October of the same year he began to suffer from dyspnœa, occasional palpitation of the heart, and cough with frothy expectoration. However, he kept at work pretty regularly until June 3rd, 1874, when his feet and ankles began to swell. He had never had rheumatic fever.

On admission his lips were congested and thin; his conjunctivæ yellow. The heart's impulse was strong; the apex beat was felt in the fifth intercostal space, slightly outside the nipple. There was a loud systolic bruit, especially distinct at the ensiform cartilage. The liver was enlarged. The urine was slightly albuminous.

He appeared to be relieved by the treatment prescribed for him, but on the 17th he died suddenly, just after drinking his tea.

I made a *post-mortem* examination on the 18th.

The brain was not examined.

The left pleura was adherent to the lung in many places. The lungs themselves had a well-marked brown colour, but were not decidedly indurated. There was no pulmonary apoplexy.

The heart weighed 21 oz. It was of about the natural shape, but much above the normal size. The right chambers were dilated and hypertrophied, and the principal fleshy column of the tricuspid valve was converted into a slender, tough, fibrous mass, so that in all probability there had been free regurgitation. The coats of the pulmonary artery were as thick as those of the aorta; its branches in the lungs were dilated and atheromatous. On cutting into the left ventricle in front, in the place usually chosen in opening that chamber, I found that its wall creaked under the scissors, and was exceedingly hard and tough. This part of the substance of the ventricle was the seat of an extreme degree of fibroid change, affecting a surface at least two inches in diameter. The induration extended a little way into the septum, and also into the adjacent part of the right ventricle, but not nearly low enough to reach that column of the tricuspid valve which has already been stated to have been affected with a similar fibroid change. It was traceable also round the heart's apex to the posterior wall of the left ventricle for a small space, and laterally over about one third of the free wall of the ventricle. The affected part was very thin, not more than one third of the thickness of the rest of the substance of that part of the heart. It was very distinctly pouched outwards, or aneurysmal, and it was lined by an adherent layer of softening ante-mortem coagulum. The endocardium of this part of the ventricle had the opaque creamy-white appearance usually seen in cases of fibroid disease of the heart, but it did not seem to me that there was any ground for the supposition that a primary endocarditis had existed, and had crept inwards into the muscular substance. The posterior wall of the ventricle was quite healthy.

The aortic valves were normal in structure. The mitral valve was healthy, but slightly atheromatous. The descending aorta was elastic and fairly healthy.

The stomach was congested. It contained a large mass of pulpy food in course of digestion.

The ileum was healthy, but its solitary glands were unusually distinct.

The liver weighed 77 oz. It was congested, but not nutmegged. Its surface was adherent to adjacent parts by semi-recent lymph.

The spleen weighed 5 oz. There was a single opaque patch on the capsule, slightly depressed, and apparently the scar left by an obsolete infarctus.

The kidneys weighed 11½ oz., and were quite healthy, except that they contained numerous depressed cicatrices, the result of former infarctus. Most of them were very small, but one was as big as one's thumbnail on the surface, and beneath this there was a complete gap in the renal substance, a little fibrous tissue alone separating the capsule from the fat of the hilus.

The testes were healthy. Neither they nor any other organ of the body yielded any evidence of the presence of a syphilitic taint.

CASE 11.—*Fibroid disease of the anterior part of the left ventricle, with calcification, causing aneurysmal yielding of the affected part; adherent pericardium; symptoms of dyspnœa and giddiness; sudden death.*

Thomas S—, æt. 61, was admitted into Guy's Hospital, under the care of Dr. Wilks, on July 15th, 1874. He complained of pain in the chest and of extreme shortness of breath, which came on when he walked even a very little way. He also said that he was giddy. He had left off work a week.

On the evening of his admission he was eating his tea, when he suddenly died. No notes of his case had been taken.

I made a *post-mortem* examination the following day.

The body was that of a very fat man.

The arteries at the base of the brain were very much diseased. The basilar artery was tortuous and dilated, so that it might almost have been said to form a fusiform aneurysm, and I even fancied that it had flattened the left side of the medulla oblongata. Its middle coat was calcified and readily separated from its adventitia.

The internal carotid arteries also were calcified. The brain itself was healthy.

The heart weighed 26 oz. It was greatly enlarged, much more so that its mere weight would indicate.

The pericardial sac was universally closed by thin adhesions, separable without much difficulty everywhere except to the right of the

apex, where the parietal layer was closely adherent to what appeared to be a thinned and calcified part of the surface of the right ventricle. However, on laying open the right cavities of the heart I found that the ventricle in question was really more to the right than the calcified part, and this subsequently proved to an aneurysmal pouch from the cavity of the left ventricle, that would have held a billiard ball at least. The heart's wall here was very thin. I measured it at one point, and found it only one eighth of an inch. When grasped between the fingers it yielded and crackled, much as a broken egg-shell would have done. The endocardium lining this part was very opaque. The rest of the wall of the ventricle was fairly healthy. Beyond the area of the aneurysmal pouch there was very little distinct fibroid growth to be detected; but in the septum, at any rate, there was enough to indicate clearly the real nature of the disease, streaks and patches of white fibrous tissue being interspersed among the bundles of muscular fibres. The left pillar of the mitral valve was also affected with a well-marked fibroid growth, not (as usual) entering it from the chordæ, but forming isolated spots or striæ in its muscular substance. The posterior wall of the ventricle was healthy, but not decidedly thickened.

The mitral valve had a single hard nodule, nearly as large as a pea, just above its auricular edge. Probably this arose from a mass of vegetations of former date.

The aortic valves were healthy, except that their bases contained some calcareous deposit, continuous with a similar change in the aorta itself, which was in an advanced state of arteritis deformans.

There was a large scrotal hernia on the left side, in which was a mass of thickened omentum and the sigmoid flexure. The stomach was dragged down by the omentum contained in this sac. It had in it much food in process of digestion. Its mucous membrane was partially dissolved.

The kidneys weighed more than 20 oz., but they did not appear to be otherwise than healthy, except that one of them had two large cysts. Unfortunately I omitted to examine them microscopically.

The lungs, liver, and testes, were healthy. There was no sign of syphilis in the body.

Remarks.—The same morbid change which occurred in the cases now under consideration existed likewise in several cases recorded in previous volumes of the 'Transactions' of the Pathological Society.

Their number is, indeed, somewhat larger than might appear from the Index, for in that work, as well as in the several volumes of 'Transactions,' numerous cases are entered under the head of "fibrinous deposits," which were really characteristic examples of what is now known as fibroid disease. Other cases, again, are described as instances of aneurysm of the heart, in which it appears evident that the yielding of the wall was incidental to a previous replacement of the muscular substance by white fibrous tissue. Altogether, it seems to me that the 'Transactions' contain at least nineteen examples of the disease in question.

These are Dr. Quain's case (III, p. 82); Dr. R. Bennett's case (III, p. 273); Dr. Bird's case, with report by Dr. Quain (III, p. 277); Dr. Ogle's case (III, p. 281); Dr. Peacock's case (V, p. 96); Dr. Bristowe's case (VI, p. 148); Dr. Bence Jones's case, with report by Dr. Bristowe (VII, p. 168); Dr. Bennett's case (VIII, p. 114); Dr. Ogle's case (VIII, p. 116); Dr. Wilks' case (VIII, p. 139); Dr. Wilks' case (VIII, p. 150); Dr. Markham's case (IX, p. 164); Dr. Dickinson's case (XIII, p. 62); Dr. Ogle's case (XV, p. 88); Dr. Moxon's case (XVII, p. 70); Dr. Fuller's case (XIX, p. 109); Mr. Pick's case (XIX, p. 156); Dr. Peacock's case (XXI, p. 118); and Dr. Whipham's case (XXI, p. 115). Two cases of cured or calcified aneurysm of the heart, recorded by Dr. Wilks and Mr. Townshend respectively (VIII, p. 103, and XXIII, p. 96) ought also, perhaps, to be included in the same category. It is of particular interest that the list should be headed by a case of Dr. Quain's, brought before the Society in 1850, because his Lumleian lectures, delivered at the College of Physicians in the year 1872, have quite lately been the means of bringing the disease very prominently before the notice of the profession.

The number of cases of fibroid disease of the heart recorded in the 'Pathological Transactions,' however, has certainly not been such as to lead one to expect that eleven cases would be met with in less than a year in the post-mortem room of a single hospital, in which only about 400 autopsies are made annually. It is, indeed, evident that the frequency of such cases within the past year at Guy's Hospital has really been accidentally in excess of the average. But I must not omit to point out that in more than one instance the existence of fibroid disease of the heart's wall might very easily, and, indeed, would certainly, have been overlooked, had it not been specially searched for. I refer particularly to Cases 6 and 9. For

some months, indeed, I have been in the habit of slicing the heart to pieces with extreme care in every case in which I have had to make a *post-mortem* examination.

To the naked eye fibroid disease of the heart presents characters which are to a great extent uniform in different cases, although they vary considerably in different parts of the same specimen, according to the degree of completeness to which the change has advanced. For it is to be observed that this affection never attacks the whole of the heart at once, nor even the whole of a single chamber. It is always more or less localised, and sometimes invades only a very small tract. In its slighter degrees it is indicated by the presence of streaks and patches of a milky white colour in the substance of the muscular tissue. The wall of the heart is thereby rendered more hard and resisting, but at the same time it often acquires rather a succulent and spongy appearance; and when it is incised its cut surface looks uneven and rough, being evidently composed of two different materials, of which the one can shrink more than the other.

Microscopically the tissue in this case is seen to consist of a perfectly developed fibrous tissue, forming wavy bands and fasciculi, which have embedded in them the heart's muscular fibres or their remains. It is particularly to be noted that the new fibrous tissue and the old muscular substance have always the same direction. Thus, when it happens that a longitudinal section has been made, the muscular fibres are seen to be separated by a wavy connective tissue, which may, of course, vary in quantity, but the amount of which between the several fibres is often about the same as the thickness of the fibres themselves. In such sections the splitting and reuniting of the muscular fibres, which is well known to distinguish the tissue of the heart from that of other muscles, is exceedingly distinct. The muscular fibres themselves may present well-marked striæ and be normal in appearance, but much more frequently they are more or less atrophied, or have undergone more or less complete fatty degeneration. Sometimes they are represented only by narrow rows of fatty granules. This condition evidently indicates a close approximation to what may be regarded as the final stage of the affection, in which the wall of the heart no longer presents to the naked eye any indication of containing a red muscular tissue, but is formed simply of a white tough material, looking very much like a piece of tendon. Under the microscope

this often appears to be made up of a glassy fibrous tissue, presenting regularly arranged fissures or interspaces, which indicate the planes of fibrillation.

In the early stage, however, it sometimes seems that a retrograde change in the muscular fibres of the heart advances more rapidly than the growth of fibrous tissue which should accompany it. It may then occur that beyond the area within which the white bands of fibrous tissue are seen a part of the wall of the ventricle presents very peculiar characters (see Case 4). It is of a greenish colour, and appears dry and friable on section. It does not look at all like muscle, but under the microscope it is found to consist entirely of muscular tissue, which still retains its striation. This altered substance may form a distinct plane embedded in the substance of the heart's wall, and, of course, appearing on a cut surface as a linear streak, more or less sinuous in outline. Further, it may at some spot soften down into a little cavity not unlike that of a pyæmic abscess. I have myself observed this condition only once (Case 4, already referred to), but the third volume of the 'Transactions' contains a parallel instance in Dr. Bird's case, reported on by Dr. Quain (vol. iii, p. 275), who expressly says that in that case "had the process of softening continued, a circumscribed abscess must have been the result."

Dr. Green, in his 'Introduction to Pathology,' has fully described the process by which fibroid disease of the heart is developed. "It commences," he says, "in the intermuscular septa around the blood-vessels. This becomes infiltrated with small cells, which tend to become developed into a fibrillated structure. The growth of new tissue gradually extends between the bundles of muscular fibres."

Now, it so happens that in not one of the cases that I have recorded in the present communication, several of which I examined with great care, did I find the small cell-growth described by Dr. Green to be present in any considerable quantity. I repeatedly searched along the border line between the healthy muscular tissue and the diseased mass, and I always found that the fibrous tissue was already fully developed, and that the corpuscular elements were certainly not more numerous than in ordinary connective tissue. In a few instances I saw some small rounded aggregations of cells, chiefly about blood-vessels. But there was not anywhere a layer of small cells or of a connective tissue rich in cellular elements, such as one would expect to find if the disease was advancing in a definite line.

In some other cases, however, which were, perhaps, examples of the same disease, I have found a very abundant cell-growth. I refer to three specimens from the shelves of the museum of Guy's Hospital, which I lately examined, because they had been described by Dr. Wilks as probably of a syphilitic origin. They are numbered respectively 1396^{70}, 1396^{72}, 1397. One of them is the preparation described by Dr. Wilks in the eighth volume of the 'Path. Trans.' as having been sent to him by Dr. Dolman, of Derby. The others were recorded in Dr. Wilks' paper on "The Syphilitic Affections of Internal Organs," in the 'Guy's Hospital Reports' for 1863. Now, in these specimens I found that the growth contained large aggregations of cells, some of which resembled leucocytes, while others were much larger, their nuclei being surrounded by masses of protoplasm which were still of considerable size, although, no doubt, they had been shrunken by the action of the spirit in which the preparation had so long been kept. It is to be noted, however, that in all three of these cases the diseased part presented more or less of the appearance of a distinct tumour. Dr. Goodhart has suggested to me that perhaps they were not really examples of an early or advancing fibroid disease, but rather of a lymphomatous growth, such as is so commonly found elsewhere in the mediastinum. One of the cases, in which a mass of the new formation extended upwards along the trunk of the pulmonary artery, would particularly bear this interpretation.

When the whole thickness of the heart's wall at any point has become completely replaced by fibrous tissue this is generally much thinner than the rest of the chamber. It then probably always shows more or less decidedly a tendency to bulge and to form a pouch, and in some cases this leads to the formation of distinct aneurysms of considerable size; the appearance of these is often so remarkable that they may easily be regarded as the principal morbid change, while the occurrence of a pre-existing fibroid disease of the heart's wall is altogether overlooked. The connection between aneurysm of the heart and "fibroid degeneration" was long ago pointed out by Dr. Quain, and it has also been mentioned by many other writers. But I do not know that any one has yet suggested, what appears to me to be very probable, that aneurysm of the heart is always attributable to this cause. I have looked through the cases recorded in the 'Pathological Transactions,' and I have examined

the specimens preserved in the museum of Guy's Hospital, and I find that fibroid disease of the heart is so constantly present as to justify me in expressing the opinion that cardiac aneurysm probably never occurs except as an accident in the course of that disease. Dr. Goodhart tells us that he has examined several of Dr. Thurnam's specimens of aneurysm preserved in the museum of the College of Surgeons, and that they also are instances of fibroid growth in the heart's wall.

On the other hand, rupture of the heart, which is so common when there is local fatty degeneration of its muscle, appears very rarely to occur in fibroid disease. I think that the only instance which I have met with is one related by Dr. Moxon in the seventeenth volume of the 'Transactions' of the Society. In that case the heart's septum contained a cheese-coloured "fibrinous mass," which he regarded as coagulum, but which he expressly said he did not doubt to be of the same nature as those formerly shown to the Society under the name of fibrinous deposit.

Fibroid disease of the heart is often spoken of as occupying the same pathological position as cirrhosis of the liver and granular disease of the kidneys. There is, however, this important distinction, that it is essentially a local affection; while in them, as a rule, the change is diffused throughout the whole substance of the organ which they attack.

It was at one time supposed, even if it be not so now, that the hobnailed liver and the granular kidney were not only analogous in their nature, but also frequently associated in the body of the same individual. It might, therefore, be imagined that one or both of these diseases would be commonly found in the bodies of persons dying from fibroid disease of the heart. This, however, is not the case. I find hardly a single instance, either among my own cases, or among those recorded in previous volumes of these 'Transactions,' in which the liver was indurated or the kidneys contracted. But, in truth, it seems to me that in these organs themselves the corresponding diseases are very seldom found to occur simultaneously or in the same individual. I lately searched the post-mortem records of Guy's Hospital with the object of determining what was the most frequent cause of that preponderating ascites which is so commonly seen in cases of renal dropsy, and I found that it was almost invariably due, not to coexisting cirrhosis of the liver, but to perihepatitis, often associated with more or less general chronic peri-

tonitis; and, conversely, Dr. Dickinson has pointed out that the different forms of chronic renal disease are not found with especial frequency in those who deal in intoxicating liquors, who yet show a marked liability to cirrhosis of the liver.

It appears to me that the true pathological analogies of fibroid disease of the heart are rather those chronic changes in the arteries which pathologists in this country have recently been led by Dr. Moxon to regard as essentially inflammatory in their origin. The first instance that I remember to have observed of the cardiac affection now under consideration occurred in a case of general arteritis, with absence of pulse in the extremities, which has been published by Dr. Wilks in the 'Guy's Hospital Reports' (third series, vol. xv, p. 35). In one of the cases recorded in this communication (Case 4) there was gangrene of the foot from chronic disease of the arteries of the limb, and in many other instances more or less extensive changes of a similar kind were present. I think it is well worthy of investigation whether slight degrees of fibroid disease of the heart are not more common than has been supposed in cases of senile gangrene and of allied conditions.

With regard to the *causes* of fibroid disease of the heart, we seem to be at present completely in the dark. It has been supposed by many observers that this affection is generally secondary to an inflammatory process, which commenced either in the pericardium or in the lining membrane of one of the heart's chambers. This is the opinion expressed by Dr. Green in his 'Introduction to Pathology.' The case recorded by Dr. Bence Jones ('Path. Trans.,' vii, p. 168) is certainly stated so as to lend some support to this view. "The endocardium covering the left side of the septum was opaque and thickened, and in the muscular substance beneath there was deposit of fibrinous-looking matter." So, again, in Dr. Whipham's case (xxi, p. 115), "The growth was in patches; the densest part of each patch was always in close proximity to the endocardium, and it doubtless originated in this membrane." In my cases, whenever the fibroid change affected the innermost layer of the muscular wall of one of the heart's cavities, the lining membrane was always more or less extensively thickened; and it is open to any one to assert that the disease had spread outwards from this membrane. But before this opinion is adopted I think it should be remembered that endocarditis is itself an exceedingly rare affection, except when it starts from one of the cardiac valves.

Again, as regards pericarditis, the case recorded by Dr. Wilks in the eighth volume of the 'Transactions' of the Society is quoted by Dr. Quain as a clear instance of enlargement of the heart under the influence of pericarditis and adhesion, in which "one half of the true muscular substance was replaced by fibrous tissue." Dr. Wilks, however, himself merely says that the fibroid degeneration which the heart had undergone was the "consequence of a general inflammation of all its structures. Thus, the pericardium was of an opaque white colour and much thickened. The endocardium in like manner was similarly affected, and this was especially the case at the lower part of the left ventricle, where the serous membrane formed a milk-white dense structure covering the inner surface of the cavity." Now, one of my cases appears clearly to prove that pericarditis may itself be secondary to chronic changes in the heart's muscle, accompanying fibroid disease. I refer to Case 4, in which, indeed, the existence of such disease in the posterior wall would almost certainly have been overlooked had it not been for the presence of a small patch of recent lymph over the surface of the affected part. And in another instance (Case 5), in which the pericardial sac was closed by universal adhesions, the membrane was very much more thickened and indurated over the left chambers of the heart than elsewhere, those being the seat of fibroid disease. It appears to me probable that in that instance the affection of the muscular substance of the heart was primary, and that it set up a pericarditis which was at first local, and the principal intensity of which remained limited to that part of the surface which corresponded with the fibroid disease beneath. I am not aware that any writer on this subject has hitherto suggested the possibility of the occurrence of this form of secondary pericarditis. But the 'Pathological Transactions' appear already to contain an instance of it in a case of Dr. Ogle's (iii, p. 281), in which "the pouches of the ventricle towards the apex contained a fine yellowish-buff-coloured deposit," and "corresponding to the external surface of this distinct deposit there was complete union of the opposed layers of the pericardium."

With regard to both endocarditis and pericarditis, it must further be said that only certain cases of fibroid disease of the heart are in any way traceable to either the one or the other of these affections. There remains a residue to which such an explanation is altogether inapplicable; and if these are to be regarded as examples of a primary

change in the muscular walls of the apex, I do not see why such a view should not be extended to those cases also in which it happens that the endocardium is thickened or the pericardium adherent.

As regards the sex of persons affected with fibroid disease of the heart, it may be noted that nine of my eleven cases occurred in males, but of the cases already recorded in these 'Transactions' a fair proportion were in females. The patients in whom I have found this affection were most of them over 40 years of age; three of them were over 65, one being 85 years old. But several of the cases which have been brought before the Pathological Society in former years have occurred in persons about 30 years of age, or even younger.

A very important question in regard to the causation of fibroid disease of the heart concerns its possible relation to syphilis. In 1857 Dr. Wilks suggested that a specimen of this disease which he brought before the Society was of syphilitic origin (viii, p. 153), and other observers have since maintained the same view. Lancereaux asserts that "gummy myocarditis differs so greatly from other cardiac lesions that it presents an indisputable specific stamp;" and on reading the description which he gives of that affection I think it is clear that he is referring to the one which is now under consideration. Now, in not one of the eleven cases recorded in the present paper was a single syphilitic lesion discovered in any other part of the body, and the same may be said of the nineteen cases related in previous volumes of the 'Transactions.' This appears to me to prove conclusively that syphilis cannot be the sole cause of fibroid disease of the heart. On the other hand, among Dr. Moxon's twenty-six cases of visceral syphilis reported in the 'Guy's Hospital Reports' for 1867, there was not one in which the heart presented this morbid change. Subsequently to the publication of his cases, however, Dr. Moxon made an autopsy in Guy's Hospital of a man who had suddenly reeled and fallen dead as he was walking upon London Bridge. In the body of this man there were well-marked syphilitic nodes upon the tibiæ, gummatous tumours in the liver and diaphragm, and extensive fibroid disease of the left ventricle of the heart. The heart from this case is in the museum of Guy's Hospital, where it is numbered prep. 1396[68].

At the time when I brought my cases before the notice of the Society I thought that the idea of the syphilitic nature of the disease under consideration had in great measure been based upon a

false analogy suggested by its name. In all the specimens that I had examined microscopically I found the morbid material to consist almost entirely of a perfectly developed fibrous tissue, very different from the substance of which gummatous formations are mainly composed. I therefore thought that the microscopical characters of the disease, if they did not disprove a syphilitic origin, at least afforded no support to it, and that it would probably be possible to distinguish both by their naked-eye and microscopical characters simple fibroid growths in the heart from any gummata that might occur in that organ.

Since that time, however, I have made an opportunity of examining carefully Dr. Moxon's preparation above referred to, in which there were nodes and other evidences of syphilis, and I am obliged to admit that no such distinction as I have suggested is tenable. Dr. Moxon's preparation shows a well-developed fibrous tissue without cells, even in those parts in which muscular fibres, embedded in the new formation, are distinctly visible. The fibres of the morbid growth are arranged longitudinally, parallel with the pre-existing muscular fibres, just as in the cases of simple fibroid disease of the heart that I have so often examined. I may add that to the naked eye the appearance of the diseased parts in Dr. Moxon's case is exactly like that which is seen in cases which there is no reason for regarding as syphilitic.

It appears to me, therefore, that at present we must admit that in syphilitic subjects the heart is sometimes affected with a morbid change identical with that which much more frequently occurs in those which show no evidence of that disease. But whether this is a mere accident or coincidence, or whether the cardiac affection is really a syphilitic lesion, I am not yet prepared to say. The fact that syphilitic affections of the liver present in so many cases distinctly specific characters makes me for my own part disinclined to admit the syphilitic nature of lesions in other organs, having characters undistinguishable from those of simple affections.

The *symptoms* of fibroid disease of the heart appear to be of two distinct kinds, or rather, perhaps, it should be said that there are two classes of cases in which this disease is principally met with.

In the first place, fibroid disease is often the cause of sudden death. There is one very marked case of this kind among those recorded in the present communication; that of a man who died

before he could be got into the hospital, having fallen down while wheeling a barrow in a street close by. Another rapid case was that of the old gentleman, who died in about five hours after coming into the fog in the City. But neither of them is so striking an instance as Dr. Whipham's case ('Path. Trans.,' xxi, p. 115) of a gentleman, æt. 29, who fell dead from his horse while riding in Hyde Park, having started in good spirits and to all appearance perfectly well, and having never previously exhibited any symptoms of cardiac disease. It is, I think, probable that we do not yet know how frequently slight degrees of fibroid change in the heart may be the cause of sudden death; and that hereafter some at least of those unsatisfactory cases which all pathologists must have met with, and which have hitherto eluded investigation, may prove to be due to the existence of disease of this kind. The tendency to a suddenly fatal termination is also well marked in cases in which cardiac symptoms have existed for a shorter or longer period.

In the other class of cases in which fibroid disease of the heart has been found after the patient's death, the symptoms during life have been those of cardiac dropsy. And it is a question of great interest whether we have any means of distinguishing, clinically, between this and the various other diseases of the heart which may give rise to such symptoms. It might be thought that in fibroid disease there would be no murmur with the cardiac sounds. And no doubt it is true that in certain cases no murmur can be detected, although it is equally true that in other cases there is a marked murmur, generally systolic in rhythm, audible at the apex, and presenting the character of a mitral regurgitant bruit in a more or less pronounced form. The question how such a murmur is produced is too large to be discussed in this place, and touches upon some of the most doubtful points in the practice of cardiac auscultation. But I may remark that since the fibroid change often invades one of the fleshy columns of the mitral valve, it very likely sometimes renders that valve inefficient.

Probably, however, in most cases of fibroid disease there is no morbid bruit to be discovered by auscultation. And in such cases of cardiac dropsy, occurring in adults, the suspicion may fairly be entertained that disease of this kind is present. The restriction to cases occurring in adults is needful, because I do not know that fibroid disease ever occurs in children; whereas Dr. Wilks has pointed out that at an early period of life cardiac dropsy is

frequently caused by adhesion and thickening of the pericardium.* Even in adults, however, there are many other possibilities to be taken into account before a case of cardiac dropsy without murmur can be set down as due to fibroid disease. There is, in the first place, the possibility that valvular disease may exist without giving rise to murmur—at least, during the time in which the patient remains under observation, and this may be a very long period. Probably it would be impracticable to obtain a numerical statement of the relative frequency of latent valvular affections as compared with that of the other forms of disease now under consideration, but my experience in conducting *post-mortem* examinations shows that it is very considerable. Then, again, there is the class of cases which are generally described as cases of simple dilatation and hypertrophy of the heart, leading to obstructed pulmonary and systemic circulation. Of these I have only to remark that probably a careful and systematic examination of the heart's muscle would remove some of these, at least, by demonstrating the existence of slight local fibroid disease. But with regard to any symptoms by which the conditions can severally be distinguished during life, we are as yet, I think, altogether in the dark. Dr. Quain says that in fibroid disease, or connective-tissue hypertrophy, there is a strong heaving impulse, with a dull and obscure first sound. So far as I know the only other suggestion that has been made for the recognition of this morbid condition is that the pulse is very slow in some cases. Thus, in Dr. Bence Jones's case (vii, p. 168) the pulse was at first 36 per minute, and very feeble; and afterwards it was 28. In Dr. Ogle's case (viii, p. 117) it was 48 per minute; and it may be noted that in this instance it is expressly said that the heart's action was feeble, which is, of course, opposed to Dr. Quain's statement just quoted. In another case of Dr. Ogle's (xv, p. 88), the pulse was slow, the heart beating at an average 38 times per minute. My cases, however, do not at all support the opinion that a slow pulse is to be regarded as a constant or even a frequent result, *i.e.* fibroid disease.

* 'Guy's Hosp. Rep.,' Series iii, vol. xvi, p. 196.

12. *Double aneurysm of the descending aorta bursting into the left pleura.*

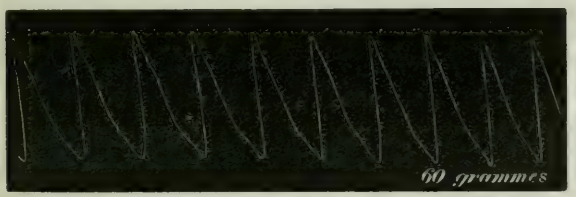
By C. Theodore Williams, M.D.

George B—, æt. 37, a commercial traveller, came under my notice as an out-patient, January, 1870. He then complained of sharp pain in the lower left chest, most severe at the lower angle of the scapula. It commenced in July, but he had been ailing off and on for two or three years, and his breath had been getting shorter on exertion. Aspect haggard; pulse 100, locomotive; pulsation well marked in the carotids.

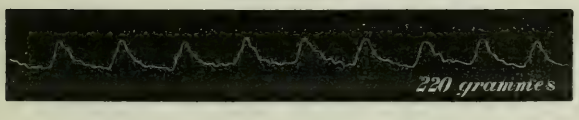
On examining his chest I found cardiac dulness increased downwards, and the heart's apex beating between the sixth and seventh ribs. A loud double murmur was audible over the first portion of the sternum, and a diastolic murmur at the apex; only a single murmur could be detected in both carotids.

Dr. Burdon Sanderson, who kindly examined the patient with me, took the subjoined sphygmographic tracings, which indicate entire absence of dicrotism. The diagnosis was dilatation of the aorta, with hypertrophy of the left ventricle.

Woodcut 6.



Woodcut 7.



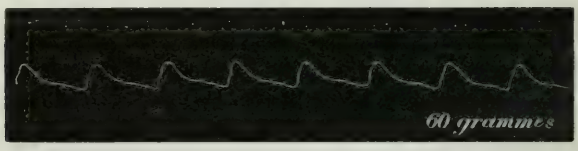
Under the influence of iron and digitalis, with occasional sedatives, his heart's action became quieter, and the pulse fell to 80. The

pains in the left side, especially in the posterior chest, persisted in spite of all kinds of treatment, though they were partially relieved by peppermint and cajeput oil. They were so intense as to make him bend double, and they generally occurred in marked paroxysmal attacks, lasting sometimes as much as twelve hours. In the autumn of the same year the pain somewhat diminished, and his heart's action became quieter.

In January, 1871, the sphygmograph gave a tracing indicating a lowering of the heart's action. In the last six weeks various drugs had been tried. Nitrite of amyl had been administered during the attacks of pain, but without relief. It caused throbbing of the head and increase of the pulse. He was much troubled with flatus, and what gave him most ease was steady perseverance with a mixture containing dilute hydrocyanic acid and glycerine of carbolic acid.

During the years 1871 and 1872 he remained in much the same state, being subject from time to time to these attacks of pain, but recovering in the intervals sufficiently to undertake a certain amount of exertion and even to walk for miles. In January, 1872, I made the annexed tracing, which indicated considerable quieting of the pulse.

Woodcut 8.



He was admitted into the Brompton Hospital, but quitted it after a stay of a few weeks, as he could not bear the warm atmosphere.

In November, 1872, Mr. Davies, of Isleworth, noticed in addition to the usual cardiac sounds some dulness and deficiency of breathing over the left posterior chest, and a fortnight later œdema of the legs, thighs, and occasionally of the left arm, with some puffiness of the face. He wasted very considerably, and became completely confined to the house.

At the end of December a pulsating tumour appeared on the left side of the spine, which rapidly increased. I saw him with Mr. Davies, January 3rd, 1873, and found him much changed. He complained of great pain darting from the cardiac region through to

the tumour; there was considerable œdema of the lower extremities and of the left arm. The right pulse was 96, and slightly stronger than the left. A pulsating tumour was visible in the lower half of the left posterior chest. It extended over a circular spot fully three inches in diameter, commencing one inch from the spine opposite to the ninth rib.

The tumour increased rapidly, corroding the ribs and spinal column, and seemed likely to burst externally. He had an attack of epistaxis a week later, and died suddenly on the 23rd of January.

An autopsy was made by Mr. Davies and myself twenty-five hours after death. The legs and left arm were œdematous. The left side of the chest seemed much distended. The left pleura was full of blood and clots, and on these being removed a large aneurysmal tumour was seen lying at the back of the cavity, from a rupture in whose walls the hæmorrhage had evidently proceeded. The tumour extended from the fourth to the tenth ribs, and had eroded them, especially the sixth and the seventh, considerably, the last two being completely separated from the spinal column.

In the right pleural cavity another large aneurysmal tumour was found encroaching on the right lung and extending from the fifth to the tenth ribs, all of which were eroded. This tumour had also eaten into the bodies of six dorsal vertebræ, one to such an extent that scarcely any of the body remained, and the other three were scooped out like rocks in the bed of a mountain torrent.

The heart was very large, and the left ventricle enormously hypertrophied. The valves were healthy, except the aortic, one of which was retroverted considerably, and must have allowed a considerable amount of regurgitation.

The aorta was greatly dilated, and was atheromatous throughout its entire extent. Its circumference was:

Above the valves . . . . . 3 inches.
Near the innominate . . . . . 4 „
In descending portion between the aneurysmal openings $4\frac{1}{2}$ „

The spectacle of the two aneurysms lying on either side of the spine and joining in the centre was a remarkable one, but owing to their close connection with the vertebral column, it was impossible to take them out without removing a considerable portion of the spine, which we were not allowed to do. We therefore dissected away the sacs from the ribs and spine.

Both aneurysms opened into the descending aorta, the right about two inches below the left carotid by a buttonhole aperture about one inch long and smooth at the edges; the left, two inches lower down, by a large aperture the size of a florin. The two sacs were separated by a well-marked septum continuous with the fibrous tissue of the aorta, but this was perforated where the vertebræ were eroded, so that the contents of one sac could pass into the other. The right sac was nearly full of hard, firm fibrin; the left contained a much softer clot, and the aneurysmal wall was thin, especially near the ribs, where the fatal rupture had taken place.

The right lung was compressed by the tumour, but healthy.

The left lung was shrivelled up, and contained a few old fibrous tubercles at the apex. The lower lobe was quite carnified.

The principal features of interest in this case were: 1st, the formation of two large aneurysms in close proximity to each other, and the final junction of their sacs. The occurrence of double sacculated aneurysm of the thoracic aorta is not very common, and is only recorded three times in the 'Transactions.' The instance most resembling the present specimen was recorded by Dr. Pollock in vol. viii, where two pouches opened out of the first and second portions of the aortic arch. 2nd, the slow progress of the disease which lasted on for years, and eventually making rapid strides, terminated life in a few weeks. *May 19th*, 1874.

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13. *A femoral artery tied with catgut; and some experiments with catgut ligatures.*

By George W. Callender.

Having an opportunity for examining a superficial femoral artery which was removed from a thigh nineteen days after an amputation for ununited fracture of the left femur of a woman, fifty-one years of age, I found that the vessel was closed by an ordinary coagulum extending three quarters of an inch from the

cut extremity of the artery towards the heart. There was no trace of the carbolized catgut with which the vessel had been tied. There was no appearance of constriction at the free extremity of the artery, and there was no adhesion of its walls, save to some thickened tissue which lay by their side. The orifice of the vessel was patent, and the occurrence of hæmorrhage was only prevented by the clot which filled its canal, and which was firm and closely applied to the surrounding arterial coat.*

I bring this vessel under the notice of the Society, because it is clear that, in this instance at all events, the catgut had disappeared, and that at the time of the patient's death the vessel was closed by coagulum only.

Being anxious to determine for myself, before making more general use of the catgut ligature, the length of time which it would hold before dissolving, I made the following experiments, with the assistance of Mr. Hames, who at the time was acting as one of my dressers:

1. A male, æt. 50, had been operated on for the removal of a large fatty tumour from the left lumbar region, and the wound which resulted was necessarily of a pocket-like shape, so that it was conveniently adapted for dipping a number of pieces of catgut into the secretions which originated within it. Four days after the operation a number of carbolized catgut ligatures† were placed in this wound so that the two ends of each ligature projected, whilst the intermediate portion was steeped in the fluids of the wound (the ordinary secretions from it, which were at no time fœtid), and the ligatures and the wound were protected with some lint which had been soaked in carbolized oil. One or more of the ligatures were examined every two or three hours, and after examination were put aside, not being reintroduced into the wound, and of these ligatures typical specimens are here shown. From these specimens‡ it appears that after the first twenty-four hours the ligature begins to lessen in its thickness; in from forty to forty-five hours it has become a very fine thread; in fifty hours it is all but dissolved; and in from fifty-five to sixty hours every one of the loops had given way

* The specimen is in the Museum of St. Bartholomew's Hospital.

† Medium size. These and the ligature with which the femoral artery was tied were supplied from J. F. Macfarlan and Co., 17 and 18, North Bridge, Edinburgh.

‡ The specimens are in the Museum of St. Bartholomew's Hospital.

through solution of the portion of each ligature exposed to the action of the wound secretions.

2. It now seemed desirable to learn whether this change in the ligatures was dependent upon the action of the wound secretions, or whether it was due simply to the effect of moisture, as from distilled water. Mr. Simons was so good as to prepare for me a modification of Dr. Lauder Brunton's automatic digestor, and by its means a number of catgut ligatures, similar to those tested in the wound, were subjected to the action of distilled water at a temperature of 98° F. Ligatures were removed for examination by Mr. Hames at regular intervals as before; but under these circumstances it will be seen that at the expiration of one hundred hours the loss of substance in the ligatures is scarcely if at all perceptible.

These experiments seem to prove it is in the secretions from a wound that we have the solvent of the catgut, and I assume, from Mr. Lister's observations, that such secretions to act in this manner must be free from the changes which denote the occurrence of decomposition, as he has found that decomposing fluids fail to act in the manner illustrated by these specimens.

In making use of these ligatures—and I do not make these suggestions in their disparagement, but only that we may gain some knowledge as to their endurance—we must bear in mind that they cannot be relied on to resist the action of the secretions of a healthy wound for a longer period than from two to two and a half days; that under a strain, as when knotted around an artery, they are likely to give way at an earlier period; and that (as shown in this femoral artery) we have to rely upon the clot for securing the vessel after the catgut has dissolved, the closure of the arterial canal by adhesion of its coats being an uncertain sequence after the application of a catgut ligature. *May 19th*, 1874.

14. *Mitral constriction; well-marked concentric hypertrophy of the left side of heart.*

By J. Wickham Legg, M.D.

Friedreich has given expression, in his book on 'Diseases of the Heart,' to the current doctrine that in uncomplicated mitral stenosis the left ventricle becomes atrophied.* I think it important to place the following case on record, because it is a case of uncomplicated constriction of the mitral orifice; and yet, instead of atrophy, there was immense concentric hypertrophy of both ventricles. The aortic valves were indeed somewhat stiff, yet they seemed perfectly able to perform their functions. Both the kidneys were sound; they had not even the appearance of kidneys subject to chronic hyperæmia. There was no high degree of arterial atheroma. Some amount of atheroma there was, as might be expected at his age (50). The only other lesion discovered, which might serve as a cause for the hypertrophy, was an aorta somewhat narrower than is commonly met with.

The hypertrophy could not be due solely to great *rigor mortis* of the heart, for the heart was increased in weight and the musculi papillares in size. Besides, the *rigor mortis* in the rest of the body was so small, owing to the great wasting, and *rigor mortis* would not account for the increased toughness of the right ventricle.

Examination eighteen hours after death:

Belly fallen in; body much wasted, like that of a man who died of hunger.

There is complete absence of fat in the subcutaneous tissue, omentum, and mesentery.

Calvaria, dura mater, and sinuses natural. Membranes of brain somewhat watery. One of the arteries in the left sylvian fissure is filled by an adherent firm white matter for about half an inch. The other arteries at base of brain natural.

The left frontal lobe of the brain contains an irregular cavity filled by a turbid opaque fluid. There is also a cavity the size of a

* Friedreich, "Krankheiten des Herzens," in 'Virchow's Handb. der spec. Path. u. Ther.' Erlangen, 1861, p. 362.

nut outside the optic thalamus filled by the same kind of fluid. Brain throughout softer than natural, but no other positive disease met with.

Both pleuræ slightly adherent in a few places; they contain each a few ounces of serum. Lungs natural, save a scarring at both apices.

Pericardium natural. Heart scarcely larger than natural; it is distinctly longer, but not broader. It feels very firm. On making a transverse section about an inch from the apex, the walls of the left ventricle take up the greater part of the section; there is scarcely any cavity of the left ventricle. The walls of the right ventricle are also hypertrophied and tough.

The blood is ill clotted in the right auricle. In the right auricular appendix is an old clot, plainly formed before death, granular and adherent to walls. Tricuspid orifice somewhat dilated; valves natural. Walls of right ventricle thick and tough. No clot in left auricular appendix; mitral orifice contracted; it only admits tip of little finger. On opening the left ventricle the musculi papillares are seen much enlarged; the walls of the left ventricle very broad. The aortic valves are somewhat stiff; one corpus arantii is nearly the size of a split-pea.

Liver of natural size and shape. The edge is slightly fibrous; it presents an early stage of nutmeg liver. The gall-bladder is distended with green bile.

Œsophagus, stomach, and intestines hyperæmic, otherwise natural. Spleen small, tough, closely adherent to diaphragm and walls of belly.

Kidneys quite natural. The capsule tears off with natural ease, leaving a perfectly smooth surface behind. On section, the relations between cortex and medulla quite undisturbed. The natural striation of the cortex quite free from any confused look.

Aorta slightly atheromatous. The bore of the vessel throughout is narrow. *May 19th*, 1874.

IV. DISEASES, ETC., OF THE ORGANS OF DIGESTION.

(A) TONGUE AND DIGESTIVE CANAL.

1. *Hernia of the appendix vermiformis.*

By C. De Morgan, F.R.S.

Edward C—, æt. 66, a shoemaker, of healthy appearance, was admitted into the Middlesex Hospital on Oct. 14th, 1873, with what seemed to be a large inguino-scrotal hernia, about the size of an orange, of an oval shape, tense, and unyielding to the touch. There was no true impulse on coughing; the whole mass was thrust down by the abdominal tension. The skin was congested, and the tumour very tender and painful. Below it was felt the testicle, and fluid could be detected in the tunica vaginalis. He had no nausea or vomiting; no pain or tenderness in the abdomen. The tongue was dry and slightly furred; the pulse 80, soft and regular.

No very perfect history was obtained. He said he had had a rupture for forty years, during the whole of which time he had worn a truss in the daytime and removed it at night. The rupture would come down often in the morning when he got up, but was easily returned and secured by the truss.

A fortnight before admission, he said, he was "taken ill." He did not know what was the matter with him, but he was confined to bed. He told us that on the 12th of October, two days before his admission, he had tried to reduce his rupture, but did not succeed. The bowels acted on the 13th and on the 14th, before his admission. He had great pain in the seat of the hernia, but nowhere else. He was admitted into the hospital in the evening of the 14th.

I saw him in the middle of the day of the 15th. His countenance was good and cheerful, with a natural colour; the pulse was about 85, and soft; the tongue moist, but a little coated; the skin natural. The abdomen was somewhat tumid, but unless firm pressure was

applied there was no tenderness. He had not had any vomiting. In the right groin was a firm, inelastic, hernial tumour, about nine inches in diameter, with a very large neck, and having the general characters before mentioned. He had had ice continually applied to the tumour, which had so thoroughly chilled the part that it had lost all the tenderness and pain of which he complained on his admission. Indeed, he said that he now felt quite easy, though before he had suffered severely. The account was that the bowels had acted freely on the day of admission.

From the absence of vomiting while the tumour was so hard and tense, from the tranquil countenance and natural pulse and skin, and from the account of the action of the bowel, I felt satisfied that there was no strangulated intestine in the tumour; nor was there any evidence of irritation as if from recently incarcerated omentum. I saw no immediate call for operation, but ordered that a small dose of oil should be given to satisfy myself that the bowel was really free from obstruction, and gave directions that should any change take place in his condition I should be at once told of it. It appeared that the oil acted freely three or four times, bringing away some solid but principally relaxed motions, natural in character, and the action did not produce any pain. He took food, and said he felt much better than he had been. He slept well during the night. When, however, I saw him on the next morning his appearance was not so good as it had been; the pulse was quickened, ranging from 90 to 100, but soft and weak; the skin was moist. The abdomen was more tumid and a little more tender on firm pressure. The countenance was somewhat collapsed and pale, and the nose pinched; the tongue was dryer. He complained of thirst, and felt a little sick although he had not vomited. There was no change in the appearance of the tumour; it was still large, and hard and doughy, perhaps a little shrunk from the ice. There had been at this time no complaint of cough, though he had, I believe, a chronic cough.

I determined to operate at once, though still satisfied that there was no bowel in the tumour. My impression was that the hernia was omental, and that probably the omentum was becoming strangulated.

On making an incision through the skin I was struck by its congested dense condition, very unlike what would be found in a recent hernia; it was adherent everywhere to the mass below. This mass consisted of a dense thick capsule enclosing a cavity, which contained

about three drachms of thick greenish pus, free from all offensive odour. The capsule or sac was more than half an inch thick; it was coated in part with a layer of unorganised fibrin. The inner surface was irregular, and a director passed easily at its upper end, in a direction upwards and outwards for some distance. There was no appearance of bowel or omentum having been in the sac at any recent period. The sac was so thick and dense that I cut away a great part of its anterior wall, so as to allow the skin to be readily brought over it; on doing so a small orifice was exposed in the wall of the sac, having a soft, reddish puckered lining. A probe was passed through this, and it seemed to lead to a small cavity behind and to the outer side of the larger one, though still embedded in its wall. This track was laid open for some distance, but the probe could still be passed on indefinitely. Neither pus nor any other matter was found in this lesser cavity, the inner walls of which were soft and in contact. It occupied the centre of the cyst-wall, with the cavity of which it did not appear to have any connection.

During the time of the operation a large amount of flatus and of soft feculent matter passed by the bowel, but nothing appeared in either of the cavities. I pressed firmly on the abdomen to ascertain whether any peritoneal effusion could make its escape, but there was no sign of it. As nothing further could be made out, the wound in the skin was closed by suture.

On recovering from the effects of the chloroform the countenance appeared livid and more collapsed. He had cough and mucous râles, and the respiration was laboured and quickened. He was unrelieved by any of the means used, and died about two hours and a half after the operation.

On opening the abdomen the cæcum was seen to be dragged down towards the inner ring, within which a portion of it passed. The small intestine opened into the cæcum just above this point, and was in no way implicated in the extruded portion of bowel. The appendix vermiformis could not be discovered. The peritoneum formed a small pouch towards the anterior part of the opening of the inguinal canal, but its walls were slightly agglutinated by lymph; they were readily peeled asunder by means of a probe. The pouch thus formed was not more than about three quarters of an inch deep, and had no appearance of having formed a hernial sac. The bowel itself, which was engaged in the inguinal opening, was adherent to the tissues with which it was in contact. The cæcum and small intestine were

healthy, but the former was thickened at the region of the inguinal canal. There was no congestion or ulceration however. On examining the parts involved in the operation, the greater cyst was found to be, as above described, a cavity, with rough, irregular lining, coated here and there with lymph, and running up into a narrower neck. On passing a director along this neck, it was found that by tearing up slight adhesions a way was made into the peritoneal cavity by the side of the adherent cæcum. The walls of the cyst were very thick and hard, almost like cartilage, and on the posterior wall of the cyst the vessels of the spermatic cord were seen enlarged and dilated, and incorporated with the wall. The testicle lay below, surrounded by its tunica vaginalis, which adhered above to the sac. The tunica vaginalis propria was the seat of a small hydrocele.

The smaller cavity was now explored. It was seen to be lined by soft, red mucous tissue. Its length was about two and a half inches, and it had a diameter large enough to contain a large goose-quill. On passing a probe carefully along this track, it was found to communicate by a small opening with the cæcum. It consisted evidently of the vermiform appendix, its walls thickened and involved in those of the larger cavity. The point most distant from the intestine was the seat of ulceration of its mucous membrane, lying beneath which was a small scale of bone, but there was no pus or other sign of inflammatory action about it. Lying in the larger cavity were found, when an examination was being more carefully made, and after both cavities had been opened, two small fish-bones.

A careful inspection was now made to ascertain whether any opening existed between the vermiform appendix and the larger sac, but none could be detected. It is uncertain, therefore, whether these bones had been lying at the time of death within the vermiform appendix, or whether they had escaped from it, and been the cause of inflammation and suppuration in the larger sac. Although water would pass readily from the vermiform appendix into the cæcum, none would pass in the opposite direction from the bowel into the appendix—the valvular fold entirely prevented it. Hence it was that while flatus and liquid motions passed freely in the natural direction, none passed down into the incarcerated vermiform appendix.

This case is, so far as I know, unique. It is clear that the history given by the patient must have been in some points incorrect. The enormously thickened mass of sac adherent to the testicle below and

to the parts about the ring above could not have been reduced at any recent time, and he must have had a large tumour constantly present, over which he wore a truss. That part of the cæcum may from time to time have descended and been returned is very probable, but the great thickening of the parts could only have been due to continued irritation, the result, perhaps, of the pressure of the truss at its upper part.

What was the nature of the hernia itself? There is some difficulty in determining this. I was uncertain whether it had not been one of those cases of post-peritoneal hernia of the appendix, complicated with old omental hernia; but my belief is that it was originally a case of hernia containing omentum and cæcum with the appendix vermiformis, its seat being the funicular portion of the tunica vaginalis described by Birkett and others. I should suppose this from the close connection with the vessels of the cord before described. From long continual pressure all appearance of peritoneal sac had been destroyed, and the entrance to the sac had been obliterated by slight fibrinous adhesions. The thick cartilage-like mass which constituted the walls of the larger cavity was probably altered omentum, which had lost almost all connection with the abdominal omentum. This omentum had at one time enclosed within its folds the descended appendix vermiformis, forming thus the small secondary sac which I have described. It is quite clear that the appendix must have been in its present position for many years—as long, perhaps, as the hernia itself had existed.

That the appendix could tolerate the constant pressure of the truss without causing more disturbance is remarkable, for it has been observed that severe symptoms, and even death, have followed its strangulation, though the colon and small intestine were quite free, and natural evacuations passed.

Still the close incorporation of the appendix with the thick mass, which itself was incorporated with the skin on the one side and the cord on the other, leave no room for doubt as to its having been for a length of time in its present position.

What determined the suppuration in the sac could not be made out. The patient had suffered severe pain for a fortnight before his admission, but the pus looked of older date than that. It may be that the small fish-bones found their way from the appendix, leaving behind no vestiges of their course; but this is an uncertainty.

The patient appeared to die from intense and rapid congestion of

the lungs, which were loaded with blood and serum. There was no appearance of inflammation of the peritoneum or bowel, or anything to account for the symptoms which existed previous to the operation, unless it were the incarceration of the appendix, which must, however, have existed for a great length of time.

His statement that the hernia had until recently been readily returned is quite incompatible with the condition actually present. I think it not improbable that he may have mistaken a varicocele for a hernia of the bowel; the veins of the cord were large and tortuous enough to give rise, when he was standing, to a considerable swelling.

October 21*st*, 1873.

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2. *Two cases of cancer of the œsophagus.*

By W. Pugin Thornton.

Case 1.—*Cancer of œsophagus extending into trachea.*—Iset K—, æt. 31, admitted into the Hospital for Diseases of the Throat, July 21, 1873, under the care of Dr. Morell Mackenzie, on account of enlargement of the thyroid gland and very slight dysphagia. Both lobes of the thyroid gland were enlarged and hard, but the neck only measured fourteen inches in circumference. The patient was of an hysterical temperament, and no great importance was attached to the trouble in swallowing, especially as a short time previously, when she was attending as an out-patient, a full-sized bougie had been passed without difficulty. Her family history was good. At the end of a month a reduction of three quarters of an inch had taken place in the circumference of the neck, the goître having been treated by subcutaneous injections of iodine, and the patient expressing herself relieved, left the hospital.

October 13th.—She applied again, and was found to be suffering from a very tight stricture of the œsophagus. For the week previous to her coming in she had been unable to swallow at all, and had been nourished with enemata. She made no improvement whilst in, and no bougie could be passed, and she died on October 20th.

On *post-mortem* examination the thyroid gland was found enlarged, the lobes embracing the œsophagus from the cricoid cartilage to the tenth tracheal ring; the canal between these situations was entirely obliterated by a dense, new formation. A hard growth, about the size of a hazel-nut, occupied the posterior wall of the trachea, between the third and the sixth rings, being evidently an extension of the disease from the œsophagus. Dr. Gowers, who kindly made a microscopic examination, found it to be of an epitheliomatous character. The enlarged thyroid, which had some appearance of being malignant as well, he also examined, but in his report says "there is no evidence of epithelioma in the thyroid gland, but a transparent colloid material, containing small round nuclei scattered through it, and here and there a trace of parallel fibrillations." None of the cervical glands were enlarged. Internal viscera all healthy.

Case 2.—*Cancer at the orifice of the œsophagus, followed by a cervical fistula.*—Ellen S—, æt. 42, first experienced uneasiness in swallowing in January, 1873. This trouble increased, and in April she was unable to take solid food, except at times a little mincemeat. Began to lose flesh rapidly, and had occasional spitting of blood, not always attended with a cough. She was admitted into the Throat Hospital on August 14th. On making a laryngoscopic examination a growth was seen, extremely ulcerated, springing from the lower part of the posterior wall of the pharynx, blocking up the œsophagus, and covering over the arytenoid cartilages. She was able to swallow only a teaspoonful of fluid at a time. Her breathing was slightly stridulous. During the first week in October she got rapidly worse, had frequent attacks of hæmorrhage, especially after trying to swallow anything. A large abscess which had been forming during the last ten days on the right side of the neck burst, and any food she took escaped through the fistulous opening. Her mother, who had had eleven children, died of phthisis, and out of the eleven children seven died of phthisis.

On *post-mortem* examination a growth was found on the posterior wall of the pharynx, above the level of the epiglottis, to just below the cricoid cartilage. At its lower part it formed an exceedingly tight stricture, completely occluding the œsophageal orifice for the distance of half an inch. There were irregular masses about the size of filberts on each side of the pharynx, on a level with the epiglottic folds. Both very much encroached on the laryngeal orifice by

pressing the arytenoid cartilages forwards towards the epiglottis. This growth was examined by Dr. Gowers, and pronounced to be epitheliomatous. From the diseased tissue on the right side, as low down as the cricoid cartilage, a fistula, large enough to admit the passage of the little finger, extended forwards to the side of the neck, and through this passage the food had passed. The deep cervical glands were found to be enlarged and hard, and were evidently secondarily affected. The internal organs were healthy.

November 18*th*, 1873.

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3. *Imperforate rectum.*

By Edwards Crisp, M.D.

This case occurred in the practice of a friend, and I made with him the *post-mortem* examination. A male child was born at the full period in August last; he was small and delicate in appearance, but in other respects apparently healthy. The child rejected its food, appeared to be uneasy, drew up its legs, and nothing passed from its bowels; the abdomen was distended. After a time an examination was made of the anus. This aperture was found perfect, but above it the intestine was felt much distended. Death took place on the seventh day. The rectum, as seen in the preparation, was found much distended, and seemed to terminate in a cul-de-sac, the intestine at this part being of its natural thickness. The contents of the bowels had lost their dark appearance, and presented a bilious colour. I place before the Society the whole of the intestinal canal distended with air, so that the occlusion is more readily seen, and the enlargement of the rectum better shown. There was no thickening or apparent alteration of structure at the termination of the intestine.

Remarks.—It is evident that in this case the contents of the bowel might have been readily let out, and the child's life prolonged or preserved; but circumstances to which I need not allude prevented the performance of the operation. Our 'Transactions' con-

tain but very few cases of imperforate anus or rectum, and this is an additional reason why I am glad to add this case to the list.

In my Jacksonian Prize Essay on Intestinal Obstructions, 1852, in the library of the College of Surgeons (unpublished), I have tabulated 67 cases of anal or rectal occlusion, all of them operated upon with the exception of eight; 56 by the rectal or perineal incision; 12 died from two to three days after the operation, 15 between the third and fourteenth days, 8 between the fourteenth day and three months, 4 lived twelve months, 4 were alive and well three years after the operation, and in one instance the patient was alive and well at the age of sixteen years.

I divided these congenital occlusions as follows:

1. Anal aperture imperfect or entirely wanting.

2. Where the anus is in a natural condition, the rectum terminating in a cul-de-sac at a longer or shorter distance above it.

3. The absence of the rectum, or its termination high up in the pelvis.

4. The termination of the rectum in the bladder, urethra, vagina, or uterus, the aperture being more or less perfect.

Other varieties occur that do not exactly come under these definitions, such as total absence of the rectum, &c. &c.

In these malformations the duration of life is usually (when no operation is performed) from two to eight days, but some remarkable examples are on record where life has been prolonged for a considerable time. In one case in my table, life was prolonged to the hundred and second day, the rectum forming a large pouch for the reception of fæces.

In other instances children have lived for years with anal occlusion. The most remarkable case, however, on record is mentioned by Baux:—A girl at the age of 14 had no anal or vaginal opening. About every third day she had pain over the navel, and ejected fæcal matter by vomiting. Urine was voided by the nipples every three or four hours. The girl was good-looking and in good health. ('Journal de Méd. de Paris,' 8, p. 59.)

I believe I was the first to give the statistics of these malformations, but Dr. Bodenhamer, of New York, 1860 (who has written the best treatise on the subject that I have seen), has collected 486 cases, making fifteen varieties, according to his division.

There is one remarkable circumstance with regard to sex that, as far as I know, has not been before noticed, viz. that boys are more

liable to these occlusions than girls. In my own tables where the sex is named there were 26 males and 16 females, and in 25 the sex was not mentioned. On analysing Dr. Bodenhamer's cases, I find 107 males and 62 females; in the greater number the sex is not stated.

Some of the above remarks are not strictly pathological, but that which relates to the termination of these curious freaks of nature must, I think, interest every pathologist.

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4. *Perforation of the bowel and fatal peritonitis, probably in typhoid fever.*

By Thomas Bevill Peacock, M.D.

C. W—, æt. 17, a clerk, was admitted into St. Thomas's Hospital on the 22nd of December, 1873, labouring under symptoms of fever, with cerebral and abdominal disorder, of four days' duration. He stated that his illness commenced with loss of appetite, followed by pain in the abdomen, vomiting, and shivering at intervals. These symptoms continued up to the time of his admission, and he was then so prostrated as to be incapable of walking to his bed. He referred the pain chiefly to the lower part of the abdomen on each side, and there was some tenderness on pressure and gurgling in the right iliac region. In the evening of his admission he had a temperature of 100·4°, and the skin was perspiring; the pulse 112; there was no appearance of eruption on the skin. The tongue was coated with a thick white fur and red at the tip and edges. The bowels were confined. Urine sp. gr. 1028, loaded with lithates, not containing any albumen. He was restless, and was directed to have twenty grains of chloral, and if necessary a second dose.

On the 23rd he had been somewhat delirious during the night. The temperature was 100·1°; the tongue coated; the pulse 100; respirations 36. He had twice vomited, but the bowels had not been acted upon. He was directed to take the chlorate of potash

and bark mixture, and the chloral at night if necessary. To have the fever diet. The evening temperature was 101°.

On the 24th he was restless throughout the day, and at night became violently delirious and required to be restrained. The morning temperature was 101°, the evening 100·9°. He could not be got to take anything by the mouth and morphia was therefore exhibited subcutaneously.

On the 25th he had had some rest during the right, but awoke at intervals in a very excited state. In the evening the temperature was only 99·6°.

On the 26th he had passed a better night, but the bowels, which had previously been confined, had been relieved three times and the motions were relaxed. The morning temperature was 99°, the evening 100°.

On the 27th the bowels had been relieved twice in the twenty-four hours, and he had also vomited once. The morning temperature was 100·1°, the evening 101·8°.

On the 28th, though the diarrhœa continued, the bowels having been relieved five times in the twenty-four hours and the motions being fluid, he was apparently somewhat better. The morning tem- was 100·8°, the evening 101·2°. Chloral gr. xx; wine ʒiij.

On the 29th he continued much the same and was craving for food. The bowels had been relieved four times and the motions were fluid and were passed unconsciously. The morning temperature was 100·6°, the evening 101°. To have the chloral repeated. Wine ʒvj.

On the 30th, except that he had again vomited, he was better. The temperature in the evening was 100·1°.

On the 31st he had not slept well and had again been delirious. He complained of pain in the pit of the stomach. The pulse was 116 in the morning, and the temperature 101·2°; in the evening the pulse was 104, and the temperature 103·7°.

January 1st, 1874.—He had not slept well, the abdomen was tumid and tender. The bowels had been twice acted upon during the night. Pulse 108; temperature 101·2°. He took his food better. In the evening the pulse was 110, the temperature 101·4°. He was directed to have a grain of opium at once, and the dose to be repeated at bedtime if he was not disposed to sleep. Wine ʒviij.

2nd.—The bowels had been five times acted upon. There was

much moist crepitation in the anterior portions of both lungs. The morning temperature was 102·1°, the evening 100°.

3rd.—His breathing was rather easier. Morning temperature 103·2°, evening 103·6°. Pulse 132. Ammonia and bark mixture every four hours.

6th.—To-day he is very much prostrated, and has a very heavy expression of countenance, and when not aroused lies in a semi-comatose state, muttering to himself and moaning, but he answers questions rationally and states that he has pain in the abdomen. He is not deaf. The lips are parched, the teeth are covered with sordes, and the tongue has a dry brown fur on the dorsum. The skin is warm, 100·8°. The abdomen is less tumid; the bowels have been acted upon three times in the twenty-four hours, the motions being quite fluid, and of a dark brown colour; they are passed in bed. He passes water freely and unconsciously. Under the poultice on the abdomen there is a copious eruption of sudamina. There is the greatest difficulty in getting him to take anything. To have ʒiij of brandy in addition to the wine. From this time he gradually sank, and died on the 8th.

During the whole of his illness there were no typhoid spots on the skin. He had been leading a dissipated life for two years before the commencement of his illness.

The *post-mortem* examination was made by Dr. Payne on the following day.

The peritoneal cavity contained a quantity of grumous, chocolate-coloured fluid, evidently partly fæcal matter. There were also in various parts rather firm adhesions and collections of pus. On injecting water into the intestines a small opening was detected in a portion of the ileum lying parallel with the cæcum, and, on laying open the canal, this perforation was found to be situated between two and three feet above the ileo-cæcal valve. It was surrounded by some thinning of the tissues, so that the opening was placed in an ulcer, not, however, much larger than the perforation. The opening was about a quarter of an inch in diameter and was somewhat rounded. There was no other disease in the intestines, except that, near the ileo-cæcal valve, two or three of the plates were somewhat elevated above the adjacent surface and the mucous membrane on them was slightly reddened and as if superficially abraded. The colon was natural. The mesenteric glands were not enlarged. The liver, spleen, and kidneys were natural. The lower half of the

upper lobe and the whole of the middle lobe of the right lung, were in the state of grey hepatization, and portions of the lower lobe were infiltrated with pus; the corresponding pleural surfaces were covered with lymph. The left lung was generally hyperæmic and in places passing into consolidation. The bronchial mucous membrane was injected, and the tubes contained much thick mucus.

The pericardium, heart, and brain were healthy.

The precise nature of this case was not clear, though it might most probably be regarded as having been one of typhoid. If so, however, it was a very unusual form of the disease, there being only one ulcer found in the alimentary canal, and that one having led to perforation. The plates on the lower portion of the ileum, though inflamed and abraded on their surfaces, were not sloughy, and did not present marked appearances of disease. There is an observation quoted by Chomel in his 'Clinique Médicale' (Obs. X^{me}), which is, however, very similar, in which a man, fifty years of age, died on the fifteenth day of typhoid, and a single ulcer, which had perforated, was found about twelve inches above the ileo-cæcal valve, with scarcely any other disease in the alimentary canal. The time at which the perforation occurred in the present case is also not clear, for the abdominal symptoms were marked from the commencement of the attack, and the excited state of the patient during the whole illness rendered it impossible to obtain a satisfactory history. Probably, however, it may have taken place about the 3rd of January, or on or about the twelfth day of illness and five days before death occurred. At this time there was a marked rise of temperature, but as the pneumonia apparently commenced about the same time, the rise of temperature may have been only due to the development of the disease in the lungs.

May 5th, 1874.

5. *Perforating ulcers of the duodenum after burn.*

By Jeremiah McCarthy.

A. B—, a girl aged 7, was admitted into the London Hospital with a large but not deep burn extending over the chest and the upper part of the abdomen. In no part had the entire thickness of the skin been destroyed. She was apparently progressing favourably until the fifth day, when she suddenly vomited a large quantity of blood. Diarrhœa ensued and there was some blood in the motions. On the eighth day she died.

At the *post-mortem* examination the small intestine was found to be distended with black blood, and on tracing the source of these two ulcers were discovered in the duodenum, one large enough to contain a sixpence, close to the pylorus under which it had burrowed for some distance, the other much smaller and near the orifice of the pancreatic duct. Both had eaten through the coats of the bowel, and were adherent by their margins to the pancreas, so that none of the contents of the bowel had escaped into the peritoneal cavity. There was not any apparent alteration in Brunner's glands. The viscera were all healthy, but very anæmic.

Ulceration of the duodenum in cases of death from burns or scalds is according to the results of post-mortem examination at the London Hospital rare. During the last eight years numerous examinations have been made specially with reference to this question, and in only another case beside the one above recorded was there ulceration. In that case, also a child, the ulceration had not perforated and there had not been any symptoms during life of duodenal lesion. In one other case, also a child, Brunner's glands were remarkably conspicuous, resembling grains of boiled sago.

In the causation of such ulcers two factors appear to be requisite—severity of injury and survival of the patient for a period of at least some days. But as in many cases when both of these have concurred, the duodenum has been found perfectly normal, some special predisposition of the patient would appear to be also requisite. *May 5th*, 1874.

6. *Sarcoma of the stomach; fibro-cystic disease of the ovaries.*

By J. Wickham Legg, M.D.

Lucy Ann L—, aged 17, was admitted into St. Bartholomew's Hospital, on April 17th, 1873, under the care of Dr. Southey. She died on the 22nd.

Owing to Dr. Southey's temporary absence from London, no notes of her state have been taken; and I regret that I have, therefore, no clinical details with which to render the case more complete.

Examination made thirty-eight hours after death.—Legs swollen; belly large.

On opening the peritoneum there escaped a considerable quantity of fluid. It was quite clear and not mixed with flakes of lymph. Peritoneum appears quite transparent and natural.

Both pleuræ contain about two pints each of turbid fluid in which flakes of lymph float. Lower lobes of both lungs collapsed.

Heart small, natural. Aorta natural. Liver adherent to diaphragm by old adhesions. Around the free edge where the suspensory ligament is attached a new growth is infiltrating the liver substance. This growth springs from the stomach to which the liver is adherent. The growth infiltrates the omentum and other neighbouring structures.

On slitting open the stomach the walls of the pyloric half are found to be made up of a new material, white, rather soft, in some places two inches thick. Over this extent the mucous membrane is destroyed in many places. The growth ceases altogether at the pylorus. Great cul-de-sac of stomach dilated. Intestines natural, except that they contain a blackish material.

Spleen adherent to diaphragm. Natural.

Kidneys natural, so also are uterus, vagina, and bladder. The ovaries about the size of cocoa-nuts; they feel quite solid, although the section shows a good many small cysts. Section white, solid, tough and fibrous.

Lumbar glands all enlarged; creamy fluid exudes from cut surface.

The gall-ducts passed through a mass of the new growth, but they were everywhere well stained with bile.

On hardening different parts of the stomach in chromic acid, staining thin sections with carmine, and mounting them in glycerine, the following appearances were found :—the new growth consisted of cells, all rounded, varying in size from something smaller than a red corpuscle to twice the size of a leucocyte; nucleus occasionally obscure, in many two nuclei, in most nucleus large. The cells were imbedded in a matrix which was only here and there indistinctly fibrillar, or homogeneous, but more commonly granular. Near the pylorus there was abundant evidence of involuntary muscular tissue having been preserved. The spindle-shaped cells were arranged in bundles, having between them a growth of the kind just described. Approaching these bundles of muscular tissue the long cells were considerably separated from each other. Of the rest of the natural structures of the stomach nothing could be seen.

The liver, where adherent to the stomach, showed large infiltration of the same growth of round cells.

In the lumbar glands no new structures could be discovered or any signs of a new growth.

The ovaries showed large numbers of small cysts, surrounded by well-formed fibrous tissue, and tissue containing large cells with large nuclei in a fibrillar matrix.

On looking through the literature of these cases I have been unable to find an instance in which a malignant growth has seized upon the stomach at so early an age as in this case. There is, indeed, one case which has been often quoted at secondhand from Dr. Walshe's book on cancer, in which a child of five weeks is said to have died of scirrhus of the pylorus. On referring to the original paper,* it is plain that Wilkinson wished to disclaim all idea that the stricture of the pylorus was cancerous in its nature; he evidently uses the word scirrhus in the same sense that all the old writers use it, meaning anything tough and fibrous, for he says: "By scirrhus I do not wish to be understood as meaning a new tissue or deposit; but simply that modification or hypertrophy of the cellular tissue which has received this name."

May 5th, 1874.

* Wilkinson, 'Monthly Journal of Medical Science,' 1841, p. 23.

7. *Cancerous ulcer of the stomach; "suppurative" thrombosis of the portal vein.*

By J. Wickham Legg, M.D.

Richard C—, aged 63, was admitted into St. Bartholomew's Hospital, under the care of Dr. Southey, on November 17th, 1873. I am indebted to the house physician for the clinical notes of the case.

The patient says he was quite well until a month ago; the first symptom he noticed was a difficulty in passing water. Belly and legs began to swell a fortnight ago, but the man was able to go to work until the end of last week. Face was never swollen, and the belly became swollen before the legs.

He is poorly nourished; tongue clean; appetite bad; bowels open. There is difficulty in passing water, and pain after food in epigastrium.

No physical signs in chest.

Some œdema of chest-walls. Belly distended; dull in either flank, but resonant over anterior surface; legs œdematous. Has been troubled with piles.

Urine decreased in quantity; no albumen. Has suffered from constipation for the last two or three months.

November 23rd.—Examined by rectum; no growth discovered obstructing its bore.

He continued very weak during the whole of December, but died quite suddenly on the 31st of the month.

Examination twenty-five hours after death. — Skin remarkably white; hair of beard and scalp quite without colour. Considerable swelling of belly and œdema of legs.

Head not examined.

On opening the belly air first escapes, then a turbid fluid. The small intestines are found matted together in front of the spine, and rough from recent exudation. The adhesions between the bowels are easily broken down.

The cartilages of the ribs except the first are not calcified.

The pleuræ are empty and are not adherent, with the exception

of a few old adhesions to back of right lung. Both lungs emphysematous; a row of bladders of emphysema, size of peas, along left lower lobe; there is no scarring at either apex. Towards pleural surface at back of right lower lobe is a thickening of the lung tissue, about a walnut in size; highly pigmented, tough, and fibrous. In centre is a small calcareous nodule of the size of a barleycorn.

Pericardium natural; over front of heart is a large oval white patch, about three inches by one inch. The heart itself firmly contracted, somewhat small; its walls of natural consistence, but of a pale brown colour. Atheroma of mitral and aortic valves; the free edges of mitral and tricuspid are much thickened.

The mesentery is highly œdematous. The mucous surface of large and small intestines from duodenum downwards quite natural, but their length much diminished.

On dissecting the structures in the porta of the liver, the packet of vessels is found much increased in size. A new growth appears to infiltrate the tissues joining the vessels, and to extend up the cystic duct, which it obstructs.

The gall-bladder is dilated chiefly lengthwise, so as to be about six inches long. It contains a pale yellow fluid. This fluid on boiling and adding nitric acid gives a flocculent precipitate; a cloudiness on adding acetic acid; it becomes more viscid on adding caustic soda. No change of colour can be observed at the ring where the nitric acid touches the fluid in Gmelin's test, but on applying Pettenkofer's test there is a distinct rose colour passing into a purple.

The hepatic artery quite natural; the common duct natural, highly stained by a bile that also contains solid particles. The portal vein, when cut across, is found to be filled with a fluid of the colour and consistence of raspberry cream. After the escape of the fluid a fibrous network appears to be left. The portal vein is much dilated, the bore is as large as a shilling. The right and left branches are much dilated; they also are filled with the same kind of contents which extend into the smallest branches visible to the naked eye. The medium-sized branches of the portal vein can have their contents wiped and washed away, leaving the vein-wall shining, smooth, and natural in appearance. The liver after the portal canals have been opened weighs 61 oz. It is not much altered in shape, but on its upper and lower surface are many rounded

eminences, white in colour and softer than the surrounding tissue. These eminences prove to be dilated portal veins, filled with the matter described above. The liver tissue near the portal canals is often very soft and looks spongy, especially after washing. The hepatic veins are natural in appearance.

The plugging of the vena portæ begins where it is formed by the union of the mesenteric and splenic veins. The splenic vein contains an ordinary thrombus for about an inch from the opening into the portal. The superior mesenteric veins are mostly free, but some contain a short ordinary blood-clot.

On the forepart of the stomach is a white irregular surface about a crown in size; it is very thin, so that it is readily broken through by handling; this area on the peritoneal coat corresponds to a large ulcer the size of the palm of a man's hand on the mucous surface of the stomach. The floor of this ulcer is of a dark green colour; its edges much everted; it is within an inch of the pylorus and on the larger curvature; the glands along the larger curvature are enlarged and very soft; one is as big as a pullet's egg and contains a creamy fluid. The stomach itself is contracted; the rest of surface covered with thick mucus. The duodenum natural. On tracing the veins, the right gastro-epiploic is found plugged for about three inches from its entrance into the splenic vein with an ordinary blood-thrombus. The left gastric epiploic quite free. A branch of the pyloric vein passing into the cancerous mass on the peritoneal surface of the stomach is found to contain, for nearly an inch, close to the new growth, matter exactly resembling that found in the portal vein. About an inch from the cardiac end of the œsophagus is a swelling of the mucous membrane, the size of a pea, soft in consistence and white in colour.

The pancreas enlarged and tough; the vein which passes through the organ dilated and filled with a material like that in the portal vein with which it is continuous.

The spleen natural in size, tough. Pulp and follicles natural.

The kidneys remarkably natural. Renal veins free from thrombus; so also inferior vena cava.

Aorta slightly atheromatous.

On the day of the *post-mortem* examination the thick creamy fluid from the cut surface of the liver showed under the microscope little else but cells; there floated also small granules apparently of oil. The cells varied from a leucocyte to four times this in size;

they were all rounded or oval. The nucleus in most was indistinctly seen or invisible until acted on by acetic acid, when it was sometimes seen to be large. In other cases no nucleus could be seen even after the action of acetic acid. The contents were very fatty, not granular; but distinct oil drops could be seen, and there were numerous compound granulation corpuscles.

A scraping from the enlarged lymphatic gland close to ulcer of stomach showed also abundance of Gluge's corpuscles. The character of the cells in this scraping closely resembled those taken from cut surface of liver. There were a great many free nuclei, and some spindle-shaped cells with large nuclei, sometimes double, seen. The cells from ulcer of stomach showed same appearance.

The fluid from the portal vein showed the same appearance as that from surface of liver.

The liver cells showed a finely granular appearance, with not many large fat drops.

Pieces of the portal vein, stomach, and liver were hardened in spirit and chromic acid, and examined in the month of May. The thin sections were stained in carmine and mounted in glycerine.

The walls of the ulcer of stomach showed a well-marked alveolar structure, the meshes of the alveoli being large and the walls thin, varying from ·008 to ·016 (rarely more) of a millimeter. These walls contained numerous rounded small cells. The cells contained in the alveoli were rounded, ·0096 to ·0128 of a millimeter in diameter, with large nuclei, rarely two; and containing drops of fat, especially marked near the peritoneal coat. The walls of the alveoli stained well with carmine; the cells, as a rule, did not.

Material filling portal vein examined: Hartnack, Oc. 3, Obj. 7. Well-marked fibres exactly resembling those of fibrous tissue were seen. The fibres stained freely with carmine and made up bulk of what was seen under microscope. In some of the meshes of the fibres were seen small rounded bodies like shrivelled-up red blood-corpuscles, and which did not stain with carmine. There were also large masses of these bodies of a green to yellow colour.

The fibres were not an indistinguishable interlacement, but they ran parallel and wavy.

There were also cells seen of the same character as those of the fresh creamy fluid, but the cells appeared much less numerous in the hardened preparations than in those examined fresh.

Liver: with Hartnack, Obj. 4, Oc. 2, 3 and 4, could be seen

great thickening of the tissue surrounding the portal vein. This tissue did not stain well with carmine, and contained abundance of what looked like green fat drops. The portal vein is much dilated, and, as a consequence, the acini seem pressed together. In some places the arrangement of the liver cells is natural; in others the cells seem lengthened and arranged in circles with the long axis of the cell in the direction of the circumference.

Remarks.—It is to be regretted that the clinical details are so meagre. The absence of jaundice should be noticed. The case resembles most nearly, of those which I have read, one reported by Bristowe.* It was believed during life to be some malignant disease of the stomach, and the diagnosis was fully justified after death, for although the naked-eye appearances were those of simple ulceration, yet the microscopic appearances, as seen in the alveolar structure, were rather those of carcinoma.

It cannot be thought that the thrombus of the portal vein partook of the cancerous nature. It is rather a thrombus partially organized, but in which the white corpuscles have undergone a great and rapid proliferation. Such an appearance is commonly called a suppurative pylephlebitis—a name open to considerable objection.

The case presents nothing peculiar except the origin of the thrombus in the stomach—a circumstance of some rarity.

May 19th, 1874.

(B) DISEASES OF THE LIVER, PERITONEUM, ETC.

8. *Obstructed common bile-duct giving rise to jaundice and enlargement of the liver.*

By W. CAYLEY, M.D., for A. SILVER, M.D.

DR. SILVER showed a specimen of obstructed common bile-duct giving rise to jaundice and enlargement of the liver.

* Bristowe, 'Path. Trans.,' vol. ix, p. 279. Cf. Bamberger, 'Krankheiten des Chylopoetischen Systems,' Erlangen, 1864, 2te Auflage, p. 589.

The patient, J. B—, a labourer, æt. 53, a man of good family history, and enjoying good health up to the time of his fatal illness, came under treatment at Charing Cross Hospital on December 30th, 1872. About six months previous to that date his fellow-labourers pointed out to him that he was jaundiced. He continued to work for some weeks, but, becoming too weak, he applied for relief at St. Bartholomew's Hospital, where he was admitted, and remained for three months without benefit. When seen he was of a dirty yellow hue all over, deeper in the face than elsewhere; his urine deeply bile-stained, and his fæces clay-coloured.

On examination the liver was found uniformly enlarged, but not to any great extent. There was no indication of any epigastric tumour. He went on sometimes improving, sometimes falling back, exceedingly dull and apathetic, till February 17th, when he died somewhat suddenly during the night. Latterly he had become ascitic. After death his liver was found to be large, weighing eighty-seven and a half ounces, the bile-ducts strongly marked on its surface, and seemingly varicose; its substance discoloured from bile. On removal, together with the duodenum, the opening of the common bile-duct was somewhat prominent and filled with mucus. On tracing it upward it was found normal, but with no stain of bile till near the junction of the cystic and hepatic ducts, where there was a soft, villous-looking mass attached to the wall of the common duct, and thence extending both into the cystic and hepatic ducts. Immediately beyond this the hepatic duct was enormously dilated even to the size of the duodenum, and containing great quantities of altered bile, which welled out when the protuberant bile-ducts on the surface of the liver were wounded. The cystic duct was slightly dilated, and the gall-bladder filled with a gelatinous mass of mucus stained with the remains of altered bile. This soft, semi-gelatinous new growth was sharply defined above and below, and there were no adhesions to any surrounding organs nor any apparent tendency on its part to spread. After hardening, this new growth was examined microscopically, and was found to consist of cells of various sizes tending to group themselves in isolated masses, with indistinctly fibrillated connective tissues between—a structure which could be called nothing but cancer. *Oct.* 21*st*, 1873.

9. *Hydatid cyst of the liver associated with cirrhosis, and cancer of the stomach and pancreas.*

By W. Cayley, M.D., for A. Silver, M.D.

Dr. Silver showed a specimen of diseased liver whose chief interest lay in the difficulty which would attach to the diagnosis of such a case. The patient, a man, æt 49, came under treatment at Charing Cross Hospital, on February 28, 1873. It was elicited that he had been already a patient under one of the out-patient physicians, but that then he complained of vomiting and pain after food, bringing up also dark grumous matters. When admitted as an in-patient, however, his main complaint was ascites. Deeming it impossible to do any good by the ordinary means for relieving such accumulations, the man was tapped on March 1 by Mr. Hird, and fifteen pints fourteen ounces of fluid removed. From the effects of the operation he speedily recovered, but began to suffer a good deal from flatus, and the vomiting and pain at his stomach were troublesome. About the middle of March he began to swell again, and ultimately died quite suddenly on the 20th. After death there were found signs of recent peritonitis and much fluid in the abdomen. The liver weighed thirteen pounds, and had its right lobe converted into one enormous hydatid cyst, containing hydatids in all stages densely packed and with no fluid between them. The left lobe was large, hard, and in a decidedly cirrhotic condition; it contained no hydatids. The stomach was nearly converted into a cancerous mass, which passed round from side to side and obstructed the passage of digested food. This was ulcerated internally and adherent externally. Behind was a softened mass extending into the interior of the pancreas, which was there adherent to the wall of the viscus.

October 21*st*, 1873.

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10. *Large hydatid cyst of the liver, perforating the diaphragm, and occupying the greater part of the right pleural sac.*

By Edward Headlam Greenhow, M.D.

The patient in this case was F. R—, a married woman, æt. 36, who had first come under my care in the Middlesex Hospital in the year 1867.

She was then tapped for a hydatid tumour of the liver, 148 ounces of fluid being drawn off, and her case was published in the 'Transactions' of this Society.* Before she was tapped on that occasion I had found dulness on percussion over the right back of the thorax from the middle of the scapula downwards, with harsh breathing and scanty crepitation over a limited space at the base of the right lung posteriorly. This convinced me that the hydatid tumour was threatening to make its way into the chest, and induced me to lose no time in having the cyst punctured. The patient made a quick recovery, and I saw her a few months after her discharge in good health, and quite free from any sense of tightness or uneasiness in the right side, but the dulness on percussion over the base of the right lung posteriorly and over the right hypochondrium had not disappeared.

She was readmitted into the Hospital under my care in May, of the present year, and stated that, in August, 1869, she had again begun to experience uneasiness in the right hypochondrium, with occasional pain of a dull dragging character, and that she had from that time been aware that she was slowly but progressively increasing in size round the waist.

On admission there was manifest bulging of the right hypochondrium and of the right side of the thorax. The liver extended as low as the umbilicus and almost across the abdomen. On the right side of the epigastrium, just below the costal arch, was a slight somewhat elastic projection, which, on manipulation, gave an indistinct sense of fluctuation. The resonance over the right back of the thorax was greatly impaired from above the point of the scapula downwards, and the breathing over the dull area was harsh and

* Vol. xviii, p. 130.

bronchial. Immediately under the margin of the ribs, below the right axillary region, there was a firm, tense projection, which yielded an elastic sensation to the touch, and which, the patient said, when pushed upwards produced a feeling of pressure in the chest. She also referred to the same region a feeling of dragging, which she experienced in the upright posture, but which disappeared when she lay down. The breathing was puerile, but otherwise healthy, all over the left lung. The heart was displaced, its impulse being visible in the left axilla in a line with the fold which formed its anterior boundary.

On May 31st, Mr. de Morgan introduced a very fine trochar into the elastic portion of the tumour in the epigastrium, and drew off six ounces of clear fluid, containing a large number of minute cysts and hooklets. The fluid having ceased to flow the wound was closed up, and three weeks later, as the patient's size had not decreased, a fine trochar was again introduced very deeply into the liver near the seat of the former puncture, but only about two ounces of fluid blood escaped from the wound. Towards the middle of July the patient suffered from rigors on several successive days, and complained of dragging pain in the lower part of the chest, and of sharp pain in the right hypochondrium when she attempted to move. A well-defined round swelling, about the size of the palm of the hand, now appeared over the lower portion of the right ribs ; it was elastic and slightly fluctuating. On July 19th, a full sized trochar was introduced into this swelling just below the margin of the ribs, and about two ounces of pus were drawn off. The wound was kept open as long as possible, but had nearly healed when I left town on August 6th. During my absence fluctuation reappeared, and the tumour was again opened, and the cavity daily washed out with water containing Condy's fluid. The patient gradually sank, and died on September 19th.

Post-mortem examination.—Just below the margin of the ribs on the right side was an oblique incision through the skin, an inch in length, reaching to within an inch and a half of the middle line. The margins of the wound were smooth, and a probe introduced through them passed in an upward direction. On reflecting back the left half of the abdominal wall the left lobe of the liver was seen to extend five and a half inches below the xiphoid cartilage. The course of the sinus was then found to be upwards through the abdominal wall, the capsule of the liver and the diaphragm, all of

which were indistinguishably blended together at this point. The sinus was about one and a half inches in length, and led into a large cavity occupying the greater portion of the right side of the thorax.

The skin and subjacent tissues were next deflected as far back as possible, and the ribs sawn through in front of their angles. All the ribs on the right side, especially the lower ones, were found to be thinned; in some all trace of cancellous structure had disappeared, leaving merely a shell of compact bone of one eighth of an inch in thickness. The bony substance of the sixth and eighth ribs was so atrophied that each of them was at one point perfectly flexible. The contents of the thorax were with great difficulty dissected on the remains of the ribs and from the side of the spine, and erosion of the head of one of the ribs was found to have taken place. During the process of removal a puncture was accidentally made into the mass, and a quantity of thin, fœtid, whey-like fluid escaped. All that remained of the right pleural cavity was a space containing the apex of the lung, and extending only to the level of the sixth rib in the axilla, at which point the two layers of pleura became inseparably united. From this point downwards all the soft tissues on the inner aspect of the thoracic wall were firmly compacted together, and so strongly adherent to the attenuated ribs that these latter left deep channels on the surface of the mass, which, when removed, exhibited the following appearances.

Behind, there was an enormous sac, springing from the upper surface of the right lobe of the liver and reaching to the sixth rib in the axillary line. Its walls were thick and formed of layers of fibrous tissue. Below it the diaphragm was traceable for a short distance on to its surface, and there lost. An incision carried vertically through the whole of the structures along the posterior aspect disclosed the interior of the sac, which was lined with an opaque, tough, yellowish-white membrane, smooth when intact, but of very variable thickness. Over the anterior part of the sac it was tolerably complete, being merely uneven from grooves traversing it in various directions; but over the posterior part, especially above, the lining membrane had nearly all disappeared, leaving irregular black and roughened vascular patches and depressions, here and there traversed by what appeared to be obliterated vessels. The sac was about the size of an adult skull, and apparently fully capable of containing two pints or more of fluid. It measured seven inches from above downwards, and eight inches laterally. The sinus communicating with

the exterior opened internally by a valved aperture directed downwards, and situated about one inch from the extreme lower limit of the sac. The length of the sinus was one and a half inches.

Above, the sac was separated by a thick shining layer of fibrous tissue from the right lung, the greater portion of which was condensed and airless; the apex alone containing air. The posterior part of the condensed lung was of a faint pink colour, the lower and anterior portion was deeply pigmented. There was no communication between the sac and the pleural cavity above.

Below, the sac was bounded by the upper surface of the right lobe of the liver, quite two thirds of which had entirely disappeared. In the extreme upper remaining part of the lobe, and separated from it by a thick layer of fibrous tissue, was a cyst the size of a duck's egg. It was of an oval shape, and on section was found to be closely packed with shreds of hydatid membrane, stained of a bright orange colour by bile-pigment.

Viewed anteriorly the great disproportion in size between the remains of the right lobe of the liver and the left lobe was striking. In this aspect the right lobe measured five inches from front to back, and five from right to left; whilst the left lobe measured seven inches from front to back, and eight inches from right to left. On the surface of the right lobe, about two inches below and to the left of the sinus, was a raised cicatrix-like patch of fibrous tissue, not extending into the substance of the liver. In both lobes the hepatic tissue was indurated, and on section coarsely granular; the lobules being especially well defined. *November 4th*, 1873.

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11. *Gall-stone in the common duct; dilatation of all the bile-ducts behind it; abscess in the left lobe of the liver, finding its way into the pericardium and right pleura.*

By J. Wickham Legg, M.D.

I wish to express my best thanks to Dr. Andrew for his kind permission to place the following case on record. I am indebted

to Mr. Mason, the clinical clerk in charge of the case, for the notes which refer to the clinical history of the patient.

Rosa N—, æt. 23, unmarried, a Jewess, admitted into Mary Ward, under the care of Dr. Andrew, on April 10th, 1873.

For some years she had felt a pain under her right shoulder; but up to five months ago she was able to follow her employment, which is that of an umbrella maker. The first symptom she noticed was vomiting; the vomited matters were of a greenish colour, but she does not feel quite sure about this. The vomiting lasted four days. She had headache, shooting pains in the chest, and shivering. Jaundice appeared the day after, and lasted a fortnight. The motions were like sand and water, but quite brown. She then got up for a day or two; but ever since then she has kept her bed. During the last five months she has lost flesh. She has been accustomed to drink a good deal of spirituous liquors.

She has never had rheumatism; father is said to have died of "heart disease."

During the last five months the catamenia have not appeared. Before that time she was always regular.

Present state on admission.—Small framed woman, with prominent eyes. Much wasted. Alæ nasi dilated. Temp. 98·2° F. Pulse 100, good volume. No jaundice.

Chest.—Percussion shows impaired resonance under left clavicle; absolute dulness from third costal cartilage, and posteriorly. Line of dulness varies with position. Auscultation gives coarse puerile breathing on right side; feeble under left clavicle. No vesicular murmur heard below third cartilage. Vocal vibrations diminished on left side. Heart's impulse not to be felt. Belly much distended; tympanitic in front but dull in both flanks. No tenderness in splenic region. Bowels regular, occasionally relaxed. Appetite fair, sometimes is thirsty. Urine thick and turbid; yellowish-white deposit. No albumen.

April 15th.—It is noted that the dulness on left side has extended to apex of lung and right border of sternum.

19th.—The chest is now resonant to middle of sternum.

The notes do not show much change in the state of the patient up to May 6th, when the existence of a tumour in the left hypochondrium is mentioned. It is said that it extends one and a half inch below the costal cartilages, and is more probably the left lobe of liver than the spleen. The tumour is tender.

Urine shows a pink sediment, which disappears with heat. No albumen.

May 21st.—The left chest was tapped; no fluid let out.

Death on June 2nd.

This patient was very taciturn, and showed great reluctance to speak of her complaints. During her sojourn in the hospital, the nurses assure me that her stools were always of a pale brown.

Examination made thirty-eight hours after death.—No jaundice; eyeballs very prominent; much wasting.

Head not examined.

Right pleura: Some few old adhesions, very vascular. These are most marked at base of lung; on dissecting them away, near the mediastinum, an opening is made into a cavity which communicates with another cavity under the diaphragm. From this opening a bilious fluid escapes. Left pleura is filled with a tolerably clear fluid, in which, however, several old looking shreds of fibrin float. The diaphragm is much raised; the lung adherent at its base. The lung, instead of being pushed upwards, as in most cases of effusion, is bound down to the lower part of the chest by these old adhesions. Right lung natural. Left collapsed.

Pericardium much thickened: it is universally adherent, except at the lower part, where the heart lies on the diaphragm. Here there is a cavity filled with a yellow turbid fluid; in the diaphragm are two roundish holes, each about the size of a sixpence (ten millimetres in diameter), through which the finger can be passed into the cavity under the diaphragm opened in the dissection of the right pleura. The heart itself lies much higher in the chest than natural. Its valves appear to be natural.

There is about half a gallon of turbid bile-stained fluid in belly; and thick lymph all over the intestines and lower part of liver. Peritoneum itself much thickened. Stomach, spleen, and liver matted together by firm adhesions, and adherent to the diaphragm.

Liver: Right lobe lies much over to left side. After some dissection, the gall-ducts outside the liver are found: they are full of a yellow fluid; they measure, now they are laid open, about an inch and a half in breadth, in the hepatic and common divisions. Just as the common duct opens into the duodenum, it is filled by an ovoid gall-stone, the size of a hazel-nut. The duct has begun to ulcerate where it tightly grasps the stone. The ducts within the liver are much dilated. The common duct for the half inch between

the gall-stone and duodenum not dilated, and is quite uncoloured. The ducts above the gall-stone pale yellow. The gall-bladder itself is not distended. The cystic duct is free from obstruction, and dilated.

On dissecting the diaphragm away from the left lobe of the liver, a cavity about six inches square is opened. It is placed between the diaphragm and the upper surface of the left lobe. It opens into the pericardium through the diaphragm by the holes mentioned above. Its walls are formed by very firm adhesions indeed, and no place of fresh rupture into the peritoneum can be found. A bile-duct of the left lobe opens freely into the abscess on the upper surface of the liver. The bile-duct opens into a depression into the liver substance, which can be filled by half a small walnut.

Right lobe of liver has a very coarse nutmeggy look: it is very soft, looks swollen, like a pyrexial liver. The tissue of the left lobe is studded with green pigment and gritty masses, like small bile stones.

Spleen natural in tissue; firmly adherent to left lobe of liver and to diaphragm.

Stomach and intestines natural; contents of small intestine everywhere colourless; in large intestine of a pale brown.

Kidneys: Slight cloudy swelling.

Aorta very narrow.

The gall-stone dissolves in chloroform, leaving a slight residue of highly coloured, nearly black matter.

The left pleura failed to be tapped on account of the height to which the diaphragm was raised. The puncture was, as usual, made in the fifth interspace. The pleura here was a very narrow cavity. The trochar and cannula passed through the pleura into the diaphragm and to a spot near the left lobe of the liver.

The cause of the peritonitis, which would seem due to a rupture of the gall-ducts, or to an abscess communicating with them, was not discovered.

Small pieces of different parts of the liver were hardened in chromic acid. Examined on June 27th. A piece of the left lobe taken from immediately under the adhesions to the diaphragm shows under microscope nothing but an expanse of connective tissue; the fibres medium sized; they run either circularly, surrounding many holes in the section; or in a rectilinear course

with wavy outline. This tissue is strewed with nuclei or lymphatic corpuscles, having no definite arrangement. Often the holes are filled with these nuclei. Now and then are seen bodies which by their high colour and shape recall liver-cells. They are in groups of five or six, separated by broader or narrower bands of connective tissue. Some specimens are very long; their length three times that of their breadth. Still the prevailing shape is polygonal. At first sight they appear to be each one body; but on careful attention it is seen that each is composed of four to six cells, each with a shrivelled nucleous. The margins of these cells very indistinct. Their contents coarsely granular, of a yellowish-brown. In the rest of the left lobe, away from the cavity, it is seen that not one of the liver-cells is of the natural size or shape, but all are small. The largest are about half the usual size; the smallest a little larger than a white blood-corpuscle. The prevailing shape is a long oval, but many are round or even quadrangular; in some places long rows of these lengthened cells are seen close together, as if caused by pressure applied to their sides. The contents of the cells are not highly granular; there are very few oil drops to be seen, and the contents are but very slightly coloured. In most of them no nucleus is to be seen; in some a shrivelled point is visible. Iodine stains the cells uniformly yellow. The natural arrangement of the cells in the lobule is altogether lost; the cells are scattered in the lobule without discernable arrangement. There is a great increase in the connective tissue; the cells, or groups of cells, are separated from one another by broadish bands; but this membrane differs from that usually seen in these cases in the complete absence of nuclei or lymphatic corpuscles. On the other hand, it is thickly studded with granules, none of which reach any size. In the connective tissue which surrounds the vessels a few of the lymphatic corpuscles can be seen, but they are rare. The tissue is granular, as described.

The part of the left lobe which is studded with pigment shows under the microscope long branching channels filled with green or brown matter. They are plainly bile-ducts filled with pigment.

Right lobe of liver: The character of the cells is almost identical with those of left lobe; if any change, it is that they are slightly more granular and a little larger. Character of the connective tissue also the same. Iodine stains the cells of a uniform yellow.

During life, the case was exceedingly obscure. It is somewhat uncommon to find a gall-stone in so young a person. There can be no doubt that this gall-stone was the starting point of the patient's illness. The pain, vomiting, and jaundice, at the very outset of the disorder, were probably symptoms of the impaction of the gall-stone in the common duct. Following this obstruction, the bile-ducts dilated. It is noteworthy that this dilatation is greater in the left lobe. I have noticed this circumstance in most other cases of obstruction and dilatation of the common bile-ducts.

It would appear from the patient's statement that the complete obstruction of the bile-ducts lasted only a fortnight, or even less. She stated that the jaundice lasted only a fortnight. She was never jaundiced during her stay in the hospital, and the stools were always of a light brown colour. The urine does not appear to have been examined for bile-pigment. The bile certainly had some means of escape from the ducts; for though, after death, the gall-stone was found firmly impacted, yet the gall-ducts were not distended, as they are when the obstruction is complete. Further, the cystic duct was free and dilated, yet the gall-bladder was collapsed. The walls of the gall-bladder contain muscular tissue, and this viscus can thus empty itself, after being distended. No muscular tissue is found in the gall-ducts. Yet after death, the obstruction offered by the gall-stone seemed complete; the shape of the gall-stone was conical, just fitted to accurately stop up a circular tube. Further, the contents of the small intestine were quite colourless. This may be due, however, to the bile having ceased to be secreted during the last hours of life. I regret that I did not examine for bile-pigment the fluid contained in the left pleura. It was lost before attention was especially directed to the liver; the bladder was found contracted, so that the urine could not be examined after death. I have not unfrequently found, in cases of obstruction to the bile-ducts, that the fluids in serous cavities, as the pleura, give a distinct green reaction with nitric acid, when no other sign of jaundice can be perceived. In this case I must own that I do not yet feel quite satisfied that the bile found its way again into the intestine. Bile is not the only source of colour for the fæces; and it should be borne in mind how common are hæmorrhages into the intestinal canal in cases of obstruction to the gall-ducts.

But if no bile found its way into the intestine, how was jaundice escaped? Frerichs* has related a case which closely resembles the present. I have not been able to find any other case on record so like. An old woman had the common duct plugged with gall-stones; dilatation of the ducts behind followed, and an abscess in open communication with a dilated bile-duct formed in the right lobe; yet this woman passed natural motions, and the only mention of jaundice is at the *post-mortem* examination. It is there said that the colour of the skin is dirty, with a trace of yellow.† May it be, then, that, in the two cases, the bile was poured into the abscess of the liver?

It is not very common to find abscess of the liver following obstruction to the bile-ducts; and when suppuration does take place, it is usually many abscesses that form, not one, as in this case. I judge that an abscess formed first around the duct near the upper surface of the left lobe, rather than that the duct burst directly into the peritoneum, because the duct opens into a somewhat deep depression below the upper surface of the left lobe.

The increase in the general connective tissue of the liver is probably due to the obstruction of the bile-duct, a similar increase being found in other cases of obstruction to the ducts. Yet the presence of habits of drink should be kept in mind. The immense amount of connective tissue in the liver near the wall of the abscess is beyond doubt due to the abscess itself. *November 4th*, 1873.

* Frerichs, 'Klinik der Leberkrankheiten,' Braunschweig, 1861, Bd. ii, p. 431.

† "Schmutzige Hautfarbe mit einem Stick in's Gelbe."

12. *Abscess of the liver, without ulceration of the intestines.*

By Robert King, M.B.

M. W—, a charwoman, æt. 50, was admitted into the Middlesex Hospital, under my care, on August 5th, 1873. All that could be ascertained with regard to her previous history was, that her health had been good until last winter, when she got an attack of bronchitis, since which she had not been strong. She had only been suffering, however, from her present symptoms for about a week.

On admission she was complaining chiefly of great weakness, and severe pain at the epigastrium and over the region of the liver.

She was somewhat emaciated, and said she had not eaten anything for a week. There was rhonchus and sibilus over the whole of both lungs, back and front, with comparatively slight cough and expectoration. The heart sounds were feeble and almost entirely masked by the rhonchus. There was great tenderness over the region of the liver, so much so that percussion could scarcely be endured; nevertheless, it was ascertained that the organ was considerably enlarged, and extended nearly to the umbilicus. No bulging or fluctuation could be detected, and there was no jaundice; the urine had a sp. gr. of 1015, and contained a trace of albumen. At 6 p.m. on the evening of her admission the following note was taken:—"Has just had a shivering fit; skin is now hot. Temp. 103·4°; resp. 28; pulse 112, small and compressible. Tongue dry and furred." During the next few days nothing occurred worth recording except an occasional sudden rise of temperature similar to that above mentioned, but not preceded by rigor, and usually followed by a fall about one degree below normal.

August 14th.—Passes very little urine, still containing a trace of albumen; the pain and tenderness over the liver, which had been somewhat relieved by poultices, are now much more severe. 9 p.m. —Pulse 124; resp. 32; and temp. 103·7°.

18th.—Had a much better night than usual; pain much less this morning. Pulse 96; resp. 28; temp. 98·8°. Tongue still brown and furred, but moist.

At 2 p.m. the patient became suddenly worse, the respiration

being hurried, the face livid, and the surface almost cold. At 9 p.m.—Pulse 100; resp. 28; temp. 98°; still very prostrate.

19th.—Has rallied somewhat since yesterday, and says she is free from pain. Tongue brown, but moist; breathing easy.

20th, 9 a.m.—Feels better, and asks to have chicken for dinner. Pulse 100; resp. 24; temp. 98·6°. At 12 o'clock became suddenly worse; pulse feeble; respiration hurried; extremities cold, and face livid. Died at 2.20 p.m.

Autopsy twenty-four hours after death.—Considerably emaciated.

On laying open the abdomen the lower margin of the much-enlarged liver was found to reach to the umbilicus.

One or two recent adhesions existed between the right lobe of the liver and diaphragmatic peritoneum; but there was no other evidence of peritonitis. On removal there was seen to be general enlargement of the whole liver, which weighed 5 lb., but more especially of the right lobe, which measured $10\frac{1}{2}$ inches from before backwards, and $7\frac{3}{4}$ from right to left. This lobe was also much bulged on both its superior and inferior surfaces, the bulged portions having an elastic and semi-fluctuating feel. On cutting into the lobe a large quantity of opaque green, but not offensive, pus poured out, together with a little blood and a small clot of fibrin. After evacuation there remained a large cavity lined by a thick membrane, and containing the remains of vessels, &c., forming a large, irregular meshwork in its interior. The diameter of the abscess was nearly 7 inches.

Above and below it came to within a quarter of an inch of the surface of the liver, but its anterior limit was about 3 inches from the anterior margin of the lobe. The hepatic tissue in the immediate neighbourhood of the sac was compressed and slightly indurated; in the rest of the lobe it was unusually friable. The left lobe measured 6 inches from before backwards, and $6\frac{1}{2}$ from right to left; it was paler than natural, and very friable. Microscopically examined, the hepatic cells were seen to be filled with fine fat granules, but the nuclei were distinctly visible.

One of the main branches of the hepatic vein proceeding from the right lobe of the liver contained a recent, firm, slightly adherent and partially discolorised clot.

The gall-bladder was half full of clear, healthy bile, and the gall-ducts were free from ulceration.

The mucous membrane of the stomach was pale, and presented no traces of old or recent ulceration.

There was considerable vascularity of the small intestines, but after careful search no trace of ulceration or cicatrisation was detected, either in the small or in the large bowel.

The spleen was somewhat soft and vascular. The kidneys were rather pale, smooth, and slightly more friable than normal. The uterus and its appendages were healthy.

Thorax.—About half a pint of serum was contained in the right pleural sac. The veins on the upper surface of the diaphragm on this side were much distended and full of clots.

The right lung was emphysematous throughout, with the exception of the inferior portion of the lower lobe, which was partly collapsed.

The left lung was also emphysematous. In both lungs the lining membrane of the bronchi was thickened, and covered by a layer of adherent mucus. The pericardial sac contained about two ounces of serum.

There was a well-marked white patch on the anterior surface of right ventricle. There was very little blood in the cavities. The whole organ was flabby, and the muscular substance pale, but the valves were normal. *December 2nd*, 1873.

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13. *Disseminated nodular growths in the liver; diffuse cirrhosis; chronic peritonitis; ascites; enlargement and caseation of the cervical and mesenteric glands; indurated tubercle in the lungs.*

By Sidney Coupland, M.B.

T. G—, a blacksmith, æt. 46, was admitted into the Middlesex Hospital, on August 12th, 1873, under the care of Dr. Thompson. He was a swarthy, somewhat emaciated man, and complained of constant rather severe pain in the abdomen, chiefly in the umbilical region. The pain had been present for a period of six weeks, and for about one week he had noticed that his abdomen was swelling. He was also suffering from cough, with which he had

been troubled for the past eight months; the cough was very troublesome, and was accompanied by a scanty muco-purulent expectoration. Sonoro-sibilant râles were heard in all parts of the chest. There was distinct evidence of fluid in the abdominal cavity, which was much distended and tympanitic, but there was no notable enlargement of the cutaneous veins. The upper limit of hepatic dulness began an inch below the nipple, and its lower limit did not extend below the margin of the ribs. There was no jaundice.

He was unmarried, and had been accustomed to much hard work. He had never been laid up before, and he had never contracted syphilis.

The abdominal distension increased rapidly after his admission, and considerably embarrassed his breathing. He was tapped on the 28th, and over seven pints of spontaneously coagulable fluid withdrawn; there was speedy reaccumulation of the fluid, accompanied by scanty flow of urine; and on September 16th tapping was again had recourse to, seven and a half pints of fluid coming away. The alleviation thus obtained was very temporary, the ascites returned very rapidly, and the patient, emaciating much, speedily sank, dying on September 23rd.

At the *autopsy* made thirty-four hours after death there was extreme emaciation, with great distension of the abdomen, which contained fourteen pints of turbid yellow fluid, in which thin shreds of false membrane were floating. The parietal peritoneum was everywhere thickened and opaque, and old adhesions existed between the liver and spleen, and the diaphragm. The capsule of the *liver* was somewhat thickened, and tore with some difficulty from the surface; but there were no partial cicatricial-like thickenings of the capsule, nor any deep puckerings of the surface of the organ. The organ was of normal size, weighing fifty-one ounces, of a dark brown colour, and somewhat granular on the surface, which here and there presented yellowish-white fibrous-looking nodules, of the size of peas. On section similar nodules, the majority about the size of dried peas, none being larger, were seen more or less sparsely scattered throughout the parenchyma. These nodules were of very firm consistence, and but loosely attached to the surrounding tissue, so that they stood out in relief on the surface of the section. They were thus very readily enucleated; they were mostly unencapsuled, but some appeared to shell out from a smooth

walled sac. These bodies were most numerous in the right lobe. On section they exhibited an opaque yellowish-white appearance; none of those cut into were actually softening in the centre; nor could any obvious relation be made out between the growths and the portal or biliary vessels. There was no dilatation or sacculation, or any obvious affection of the bile-ducts. The liver parenchyma presented a nutmeg appearance; it was much indurated and granular. The *spleen* was enlarged and softened; the *kidneys* small, pale, and tough. The *mesenteric glands* were all notably enlarged, varying in size from a French bean to a walnut; the larger ones on section presented a uniform opaque whitish-yellow appearance, like potato, save in the neighbourhood of the capsule, which was much thickened; while the smaller glands and those less advanced in degeneration presented quite normal characters in the cortical, and portions of the medullary substance, the most central parts only being opaque and degenerate. A few of these glands contained a quantity of black pigment. Both *lungs* were firmly adherent to the chest wall, especially at the apices, so that the lung-tissue was torn on removal; they were deeply pigmented throughout, and somewhat emphysematous. In each organ the upper lobe contained firm masses of old pigmented and indurated tubercle, with a few small vomicæ and cretified nodules in the midst of the dense tissue. The bronchial glands were enlarged and pigmented. The *heart* was small and flabby. The *cervical lymphatic glands*, and notably those on the right side, were much enlarged; the uppermost and largest of these, being of the size of a walnut, was broken down into a diffluent and semi-purulent material (so that it had formed a fluctuating pyriform swelling beneath the lobe of the right ear); the rest were firm on section, opaque, whitish-yellow, and cheesy. The larynx and intestines were not examined.

Portions of the liver, lung, and mesenteric glands were examined microscopically, after hardening in chromic acid. The nodules in the liver possessed the following structure: Each nodule was in a more or less advanced stage of degeneration, its central portions being mainly amorphous and granular. It would appear that the degeneration had proceeded from more than one centre, for most sections, after staining with carmine, exhibited more intense coloration at some parts than at others. Further, an ill-defined reticular structure could be made out even in the most central parts of some of the nodules, but in none were any cellular elements

present in these parts. The margins of a nodule were, however, crowded with small round cells, having the characters of "granulation-cells," contained in a slightly fibrillated matrix, which in some places also contained small spindle-cells. There was no distinct line of demarcation between the growth and the liver-tissue, for in some parts isolated and atrophied liver-cells were seen surrounded by the small cell infiltration; yet there was generally a more or less complete zone of compressed hepatic cells in the immediate neighbourhood of the growth. In most of the sections no vessels could be seen, but in a few some small capillaries filled with blood were seen in the growth itself. The portal canals and their containing vessels were, however, much thickened. Sections taken from other parts of the liver showed tracts of extreme congestion, and also more or less diffuse cirrhotic change, mostly in the nuclear stage, and although somewhat abundant around the portal vessels, by no means limited to the interlobular tracts, but penetrating into the lobules themselves, so that there occurred whole tracts of atrophied liver-cells loaded with pigment. In general this change appeared in close connection with the nodular growths, but it was by no means limited to their vicinity. Lastly, many lobules were perfectly intact. The indurated masses in the lung exhibited the characters of tubercle that was undergoing the fibroid change. The mesenteric glands exhibited the appearances of chronic inflammation, while their major portion was simply granular, amorphous, and, in fact, caseous.

The history of the case, the persistent abdominal pain, the rapid accumulation of the fluid, the character of the latter, together with the patient's steady and increasing emaciation, without any obvious disease of the liver, led to the conjecture being first propounded that the ascites was probably in great measure due to cancerous peritonitis; later, however, the diagnosis of cirrhosis was put forward, and to this cause, doubtless, the ascites was mainly owing. To what extent, however, the nodular growths found in the organ associated with the cirrhotic change were concerned in the production of the portal obstruction it is hard to say, nor can an opinion be hazarded, unless the relation which these nodules bear to the cirrhosis can be determined.

It is difficult to state dogmatically what is the precise nature of these nodules in the liver; but the question is, I think, limited to the view of their being either of tubercular or of syphilitic origin.

But they do not conform in many particulars to the received descriptions of tubercular growths or syphilitic gummata. The following are the strongest points in favour of the *tubercular* view, as opposed to the syphilitic.

1. Absence of any syphilitic taint as obtained from the history, a fact which must be taken for what it is worth. The record here is, I regret to say, incomplete, for neither the absence nor presence of obvious syphilitic lesions was noted at the *post-mortem* examination.

2. The naked-eye characters of the organ and of the nodules themselves are rather those of tubercle than of syphilis. There is none of that dense cicatricial fibrous tissue puckering the capsule, and stretching inwards from it, or investing the nodules, which is almost invariably present in indubitable "syphilitic cirrhosis." The nodules themselves are not irregular in shape, do not send out processes into the liver-substance, but are perfectly globular, and "shell out" with the greatest ease. Most, if not all, descriptions of a syphilitic gumma, at whatever stage of its existence, lay especial stress upon this intimate connection between the new growth and the liver-parenchyma.

3. The microscopical characters of the growth, so far as they go, are quite as much, if not more, in favour of tubercle than of syphilis; the caseous central portions of each nodule, especially of the larger ones, appearing to be made up by the confluence of several smaller nodules. The round-cell or nuclear tissue which forms the bulk of the growing margin of each nodule is common to either a gumma or a tubercle (and, indeed, an indistinct reticulation could be seen, especially in the smaller and presumably younger nodules).

4. The association of these liver-changes with the existence of chronic tubercular disease of both lungs, and the wide-spread enlargement and caseation of the lymphatic glands, notably those of the mesentery, with the fact that one of these glands (in the neck) had softened down. Here, at least, there is undoubted tubercular or "scrofulous" disease.

It is obvious, however, that none of these points, save perhaps the second, militate against the view of the syphilitic nature of the hepatic nodules. Indeed, there are characters in the growths themselves which strongly favour the *syphilitic* hypothesis. Thus—

1. Although so readily enucleated, there is nevertheless a wide-spread nuclear overgrowth extending into the parenchyma from the margin of the nodules, as well as independently of them. The non-

limitation of this early cirrhosis to the interlobular tissue, and its penetration into the lobules themselves, isolating, and leading to the atrophy of individual cells, is like that which is held to be peculiar to syphilis (Cornil and Ranvier). It has been stated, however, by Dr. Payne ('Path. Soc. Trans.,' vol. xxi, p. 211), that the liver-cells encroached upon in this manner "do not become gorged with fat-globules and pigment as in ordinary cirrhosis;" in the present instance the atrophied cells are much loaded with pigment. Unless then we can admit such a diffuse cirrhosis to be started by tubercle, we have here a strong point in favour of syphilis.

2. None of the nodules have softened of themselves, nor are there any vomicæ found in connection with the bile-ducts. Most authorities (Rokitansky, Niemeyer, Frerichs, &c.) indeed aver that the large yellow cheesy tubercular nodules occasionally found in the liver do rarely soften; but, on the other hand, their association with "cavities" resulting from a concomitant affection of the bile-ducts is admitted by all, and it is a character upon which Virchow ('Krankhaft. Geschw.,' ii, p. 425), relies greatly in discriminating between the rare large yellow tubercle of the liver and the gummatous nodule.

3. The non-vascularity of the nodules might appear to be a point more in favour of tubercle than of syphilis (Cornil and Ranvier); but Dr. Payne has pointed out (loc. cit.) that absence of vessels, or rather their early obliteration, is a characteristic of syphilitic cirrhosis. Besides, in some of the specimens small vessels containing blood could be seen in the growth.

It is much to be regretted that the larynx and intestines were not examined. Had evidence of syphilitic ulceration existed in the former, the grounds for believing in the like origin of these growths would be materially strengthened (I may add that during life there were no symptoms pointing to affection of either larynx or bowel); but had only tubercular changes been found, the case would stand as it is, for there is already ample evidence that the man was tuberculous. Nevertheless I am not prepared to admit that this liver really presents an example of the very rare condition of large caseating tubercles, unaccompanied by any tubercular "cavities" or change in the bile-ducts; so that I am the more inclined from the study of the histological appearances to favour the idea that they are of the nature of syphilitic growths. *December 2nd*, 1873.

Report of the Committee of Morbid Growths on Dr. Coupland's case of disseminated nodular growths in the liver.—We have examined thin sections of the liver referred to us for report, and we have nothing to add to the full account of its histological characters given by the exhibitor. We would, however, draw attention to the fact that the nodules of new growth present several centres in which the degenerative changes are the most marked. The existence of these centres would appear to us to indicate that the growths originated from separate foci. Respecting the probable nature of the growths —judging from their histological characters, especially from the appearances which they present of having originated from separate centres—we should be inclined to regard them as being probably of a tuberculous origin. This view is, we think, also favoured by their small size, their number, and by the absence of any syphilitic affection of the capsule of the liver. The fact that the mesenteric glands were caseous, and that there was more or less chronic peritonitis, would render it in the highest degree probably that there existed some chronic inflammatory change in the intestine. (The intestines, unfortunately, were not examined.) If such were the case, it would afford additional ground for believing in the tuberculous nature of the nodules in the liver, as the existence of such intestinal lesion might have served as a starting-point for the development of infective processes in the liver.

T. Henry Green.
J. B. Sanderson.

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14. *Pouches in the peritoneum.*

By J. F. Payne, M.B.

This specimen was taken from the body of Hannah H—, æt. 62 (widow, with one child), who died in St. Thomas's Hospital, December 17th, 1872, of bronchitis and emphysema. It is one of a kind of structure sometimes met with in the peritoneum, doubtless congenital; and though not generally giving rise to any symptoms, sometimes important as one of the causes of

internal hernia and even strangulation. At the attachment of the cæcum to the intestinal wall is seen a considerable pouch formed by separation of the two layers of meso-cæcum, and lying, therefore. between the cæcum and the abdominal wall. The cæcum is at the same time somewhat twisted, so that the vermiform appendix lies inside this pouch. When fully dilated it is large enough to hold a small orange. In a vertical line above this, in the corresponding situation, is another pouch nearly as large, also formed by separation of the folds of meso-colon, and situated between the ascending colon and the abdominal wall. Above this, again, in succession, was some indication of a third pouch, much smaller; but this is not clearly seen in the specimen as it is now put up.

Each of the larger pouches was found when the parietal peritoneum was separated to be quite complete, and was filled with coils of ileum when the abdomen was opened; but as the opening of the sac was as wide as any other portion, there was no likelihood of strangulation. The depth of each appeared at first to be rather more than two inches, but they were, of course, easily distended. The walls were somewhat thicker than the ordinary thickness of parietal peritoneum, so that the thinnest part was that which lay against the abdominal muscles.

Pouches similar to the lower of these have several times been described. Such a structure was first distinguished by Treitz ('Hernia Retroperitonealis,' Prag., 1857), under the name of fossa subcæcalis; he speaks of a hernia in this situation as being extremely rare. Dr. Pye Smith ('Guy's Hospital Reports,' vol. xvi, 3rd Series) has described a case in which some feet of ileum were contained in a similar subcæcal pouch, but were not inflamed or otherwise affected. There are probably other cases on record, though I have not been able to find any reference to them on looking through the 'Jahresbericht' and other periodicals.

Treitz, as I may perhaps be permitted to remind the Society, distinguished three situations for congenital pouches of this kind: the fossa duodeno-jejunalis, formed by a fold of peritoneum surrounding the duodeno-jejunal flexure of the bowel, where the inferior mesenteric vessels enter or leave the peritoneum; the fossa intersegmoidea, beneath the meso-colon of the segmoid flexure, and the fossa subcæcalis, which we have here. The first he explains to originate in the changes of position undergone by the intestine during development; the two latter by the connection of the change

of the colon with the descent of the sexual glands. There can be, I suppose, little doubt that the situation and attachments of the cæcum are influenced by the processes connected with the development of the sexual glands; and especially with the descent of the testicle in males. In this case the connection of the meso-cæcum, if any, with the ligaments of the uterine organs was not noticed.

This specimen has been brought forward chiefly to draw the attention of anatomists and of pathologists to abnormalities, which must often pass unnoticed, but which are interesting both in themselves and in their possible pathological consequences. The specimen is preserved in the Museum of St. Thomas's Hospital.

December 2nd, 1873.

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15. *Large lymphomatous tumour connected with the colon and omentum of a child, and accompanied by secondary growths in other parts.*

By Henry Arnott.

William H. B—, a pretty boy, with oval face, clear olive complexion, and dark brown eyes, æt. 4 years and 3 months, was brought to me amongst the out-patients at St. Thomas's Hospital, on June 11th, 1873, with the following history:

Whilst washing the child on the same morning his mother had noticed some hardness and fulness of his stomach; and as she had observed that for a fortnight previously his clothes had seemed tight, and that he had occasionally complained of lassitude and failure of appetite, and put his hand to his stomach as if in pain, she was anxious to learn what was the matter.

The child seemed to be in capital health, a fine, bright, intelligent boy, but with somewhat delicate complexion. He was carefully examined not only by myself but by several of the senior students who chanced to be present, and we found some distinct fulness in the centre of the abdomen. On manipulation, which caused no uneasiness, an area of dulness and increased resistance was made

out, about the size of a large orange, extending pretty equally around the navel, but with a rather longer vertical than transverse diameter. There was no history of febrile disturbance, of irregularity of bowels, nor of wasting; no tenderness, and, as has been said, no indication of pain beyond an occasional look of weariness in the child's face and a putting of his hand to the belly. Those who examined the case with me regarded it as either an early stage of tabes mesenterica, or an instance of fæcal accumulation.

The history of the case, however, did not favour either of these views, and I was, moreover, struck by one circumstance which had escaped the notice of the students. In the skin just above the umbilicus was a little firm nodule like an imbedded split-pea, pinkish, freely movable over the mass beneath, but giving me at once the impression of a secondary sarcomatous nodule. When questioned, the mother said she had noticed this nodule for the first time to-day, but she had not regarded it as of any importance. On further examination I came to the conclusion that there was some new growth in the omentum, and that from the age of the patient and the consistence and absence of umbilication of the nodule in the skin, the growth was probably of a sarcomatous nature.

The notion of tabes seemed excluded by the absence of any wasting, diarrhœa, sweating, or rise of temperature, although there was an unfavorable family history, both grandfathers and one maternal aunt having died of phthisis. The position of the mass and the previous regularity of the bowels were also opposed to the notion of fæcal accumulation. I therefore expressed my fear of the case being more serious than the slight symptoms seemed to indicate, and gave small doses of castor oil for a week to clear out any possible accumulation, and so render the diagnosis more certain.

Next week the nodule in the skin was distinctly larger and more rosy, and although there had been two or three daily evacuations, the abdominal mass had clearly not diminished, but rather seemed larger.

Feeling now confident of the nature of the case, although the child still seemed in good health, and being anxious to watch its progress, I told the father, who attended at my request, that I feared his child had an internal tumour, which was likely to grow rapidly, and within a short time to become suddenly worse and speedily end the child's life, and I suggested the desirability of the

boy's admission into the hospital that other opinions might be obtained, and, if possible, something in the way of treatment tried. The parents were naturally unwilling to accept so grave a prognosis, but a week later they consented to send the child in. Mr. Croft kindly lent me a bed, and on June 25th the youngster was admitted into the children's ward.

The boy remained thus under observation for nearly a month longer, and was examined by several of my senior colleagues.

During the whole of the time, until within two days of his death, he ran about the ward and played with the other children quite gaily, occasionally, however, looking pale and languid, and at such times being willing to rest quietly in his cot.

On July 9th I made another careful examination. The nodule in the skin now almost touched the umbilicus, and measured $1\frac{1}{4}$ by $\frac{3}{4}$ inch. It was apparently adherent to the mass beneath. This had considerably increased, and now occupied the greater part of the abdomen, having the shape represented in the diagram exhibited. It was not crossed by any air-containing viscus, but was uniformly dull, almost elastic in some places and lobulated. It seemed quite clear of the abdominal wall save at the navel and adjacent nodule. It was still free from tenderness, and the boy seemed fairly nourished.

On the 20th, some three weeks after admission, sudden collapse and sickness occurred. He was put to bed, and large poultices applied to the belly. Towards evening the temperature rose to 102·8°.

Next day there was marked tenderness of the abdomen, great heat of skin, and evidently increased fulness. The superficial abdominal veins were enlarged, the face and lips pallid, carotids pumping, temp. 103·5°, and for the first time the right testicle was seen to be enlarged. Profuse perspirations and exhaustion supervened, and the little fellow died at 11 o'clock p.m.

Dr. Payne examined the body next day, and the following notes are taken from his account in the hospital register:

"July 22nd, 1873.—*Examination sixteen hours after death.*—Body fairly nourished. A flat tumour, about three quarters of an inch across, just under the skin, a little above the umbilicus. Abdomen distended, peritoneum contained about one pint of purulent matter and some adherent flakes of lymph from acute inflammation.

"A large tumour, larger than a cricket-ball, chiefly in the

great omentum, but also partly contained in the mesentery and mesenteric glands; not attached to the walls of abdomen or to any solid viscus.

"The transverse portion of the colon had its walls involved in the growth, and on opening the intestine ulceration of the mucous surface was found perforating the wall and leading into a softened portion of the growth. Two patches of ulceration, the smaller two inches long, did not perforate: the larger, three or four inches long, and going all round the intestine, did so.

"The tumour was mostly soft, white, opaque, and 'medullary' in appearance, giving much creamy 'juice.' Some parts were red and very vascular, some yellow, firm, opaque, looking like included hardened adipose tissue.

"Mesenteric glands soft, creamy, and 'medullary.'

"*Kidneys.*—Each contained two or three tumours the size of a cherry, resembling the original tumour.

"*Liver.*—Contained one small, similar tumour, was otherwise quite natural.

"*Lungs* quite natural, crepitant, pale.

"*Heart* natural.

"*Right testicle* appeared enlarged. On examination it was found that the testicle was quite natural, but the epididymis and part of the spermatic cord was enlarged and infiltrated with some new growth, looking like that in the viscera.

"Organs otherwise perfectly natural."

I hardened some bits of the tumour in chromic acid, and afterwards examined thin sections under the microscope, finding the structure that of ordinary lymphoma—that is to say, a growth rich in small, round, and oval cells, mostly containing a single large nucleus, the whole supported by a delicate network of fibroid tissue, precisely like that forming the stroma of a lymphatic gland. Dr. Creighton kindly lent me many sections taken by him from the other growths, all of which showed the same characters; and some of his sections taken from the wall of the colon at the site of ulceration seem to him to throw a great light upon the origin of the tumour.

Thus, one of Dr. Creighton's sections made vertically through the colon at the edge of the ulceration, and therefore at the margin also of the tumour which is in direct continuity with the intestinal wall, presents the following appearances:

At the thin end of the wedge-shaped section the unaltered bowel

is seen, with its muscular layers and submucous connective clothed with villi and crypts of Lieberkühn. Thence passing towards the thicker part, a gradually widening mass of lymphomatous tissue is seen separating the muscular from the mucous coats, and seated in the submucous connective. Further on still, the mucous covering is destroyed by ulceration, and the muscular layers merge into the mass of the tumour, the peritoneum being apparently continued on to the surface of the large growth. These appearances satisfy Dr. Creighton that the starting-point of the tumour was a proliferation of the adenoid tissue in the submucous connective of the colon, and he is further of opinion that such connexion as existed between the omentum and the tumour was owing to an implication of the omentum by the mass in its growth downwards.

This view is favoured by the observations of Cornil and Ranvier,* who have frequently seen lymphomatous tumours in the mucous membrane of the stomach and intestines. But these writers speak of very small tumours only, the largest referred to by them measuring some two or three centimètres. Virchow also, in his great work on tumours, refers to the occasional occurrence of small growths of this kind in the intestine. If the tumour under observation be really an enormous development of one of these, it is so far as I know a unique case, in regard of its dimensions.

It may of course be said that it is impossible to settle clearly the starting-point of a tumour so large and involving so many tissues. Indeed, the absence of any smaller outlying growths in the mucous membrane of the bowel seems rather to favour the view that the morbid change commenced in the glandular tissue of the omentum, and contracting adhesions subsequently with the adjoining bowel, opened into this by infiltration of its wall and softening of the new tissue, just as is frequently observed in the case of cancer of the fundus of the uterus communicating with the overlying intestines by ulcerated openings, whose margins are freely infiltrated by the cancerous material. Anyway the case is one of great pathological interest and rarity, and deserves to be put on record in our 'Transactions.'

I should have mentioned that the separate nodule in the skin which had first suggested the diagnosis, was situated in the deeper part of the subdermic connective, the skin above and the tissues

* 'Manual d'Histologie Pathologique,' vol. i, p. 257.

beneath being unaltered. It is also noteworthy that sections through the nodules in the kidneys showed that the renal tubes were hardly at all changed by the extensive intertubular growth. The lymphomatous tissue here seemed to have its sole nidus in the intertubular connective, the renal epithelium lining the widely separated tubes being quite natural in appearance.

Finally, not the least interesting feature of the case from a clinical point of view is the evidence it affords of the real service of recent pathological researches to the practical surgeon. Here was a boy in apparently excellent health, certainly with no trace of any so-called cancerous cachexia, in whose stomach his mother had for the first time that morning noticed a certain fulness, and guided almost entirely by the little nodule in the skin, one was able to state pretty confidently that the child had a sarcomatous tumour in front of the intestines, whose malignancy was already established, and from a knowledge of the course of these soft sarcomata elsewhere, one was able to predict already the rapid course of the disease and its sudden termination at last by peritonitis or rupture of the tumour, and discharge of its spoiled elements into the peritoneal cavity. *December 2nd*, 1873.

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16. *Hydatids of the liver, omentum, and recto-vesical pouch; compression of the hepatic duct; jaundice; xanthelasma multiplex.*

By J. Wickham Legg, M.D.

While I was taking Dr. Church's out-patients during the last autumn, there came among the rest a man, the deep yellow of whose complexion at once attracted attention. Of his condition at this time I have but few notes.

On September 5th, I find I have put down: C. K—, æt. 35, a cattle dealer, married. He denies being a drunkard, or even having had syphilis. He has been jaundiced for nine months, during which time the jaundice has been sometimes less, sometimes more.

He has never had any pain in the right side. The man is universally jaundiced of a deep yellow. Urine gives a marked green reaction with Gmelin's test. Liver.—Left lobe much enlarged, even as far as umbilicus; then is felt a notch, and the right lobe can be traced about an inch below margins of ribs. Surface smooth; edge sharp. There is well-marked xanthelasma palpebrarum; the patches are tolerably symmetrical. There are two yellow spots, the size of pin's heads, on conjunctivæ of right eye; a similar smaller one on caruncle of left. The patches of xanthalasma occupy inner third of eyelids. Tongue purplish; along its sides are patches, yellowish-white, oblong, quite soft and slightly raised. Until they were pointed out to him, the man did not know of their existence.

On October 3rd I have noted: There is also a yellow spot on middle line of roof of mouth; near lingual vein another yellow raised spot; nothing on cheeks, but there are spots of xanthelasma on the palm of the hands and left elbow, on the right ear, and left side of nose.

Soon after this date he passed from my observation until November 18th, when he was admitted into Matthew's Ward, under the care of Dr. Black. For the following clinical notes I wish to express my best thanks to Dr. Herbert Taylor, House Physician to St. Bartholomew's, who had charge of the case.

"C. K—, æt. 35, said he was quite well up to last October twelve months. He was never jaundiced before that time. He then began to feel weak and depressed, and about the same time was told he was becoming yellow. During these twelve months he has had remissions of the jaundice, remaining clear coloured for three or four days together. Such remissions have occurred about twice in a month. He has not suffered any pains whatever till the last six weeks; then, about ten minutes after taking any meal, he is seized with pain as though his bowels were being tied in a knot, at the same time his belly swells, and he suffers from wind. The pain lasts from half an hour to three quarters. For the last six weeks he has had difficulty in passing his stools. Occasionally a little blood with straining. The stools are always clay coloured and hard, even in the remissions of the jaundice. Micturition during the last week has been very painful; a small stream, occasionally stopping. Before this, urine was abundant, always dark and staining the linen, even in the remissions of jaundice.

"He has lost flesh considerably during the last year; he thinks

about two stone. He has not been a spirit drinker; chiefly beer.

"Seven years ago he was very much troubled with 'worms,' and passed one eighteen feet seven inches in length.

"His legs began to swell about five weeks ago; they are now much less swollen. His skin does not itch much, chiefly the head.

"Has always been a healthy man, although exposed to all weathers.

"He is married; six children. Never had gonorrhœa.

"Nov. 19th.—A thin, careworn man, blue eyes, sandy red hair, lying most comfortably on his back. The whole body coloured of a uniform dark yellow tint. Conjunctivæ yellow, pupils contracted. He does not see, nor has he ever seen yellow. On certain parts of his body are patches, irregular in shape, assuming more the form of the parallelogram than the circle, of a pale yellow-white colour, paler than the surrounding integument, denser to the touch, but moving freely with the skin over the subjacent textures; smooth surface, not raised; in size from 1‴ × 2‴ to half an inch by half an inch. The parts thus affected are: the inner canthus of each eye and adjacent skin, one in palpebral conjunctiva of left lower eyelid, one larger over right temporal region (zygoma), on the helix of the right ear, on the nape of the neck; many small patches on ball of thumbs, one on ball of left little finger, ulnar extremity, around the root of the penis at junction of skin of scrotum with abdomen, and in the perinæum; none below this point; in the flexures of the fingers of both hands, but not in the toes; stains of old purpura on lower arms and the legs. Scattered over the abdomen and back scantily are pustules, broken down by scratching. In the mucous membrane of the lower lip are two small patches, similar in appearance to the patches seen on skin. Along each side of the tongue, reaching from behind forwards to the tip, not appearing on the upper surface, are masses of tissue of similar appearance, somewhat symmetrical.

"Pulse 72, regular; radial artery atheromatous; temperature 97·8° F. Chest well formed; movements equal on both sides. Heart's apex beats in the third left intercostal space, half an inch above and to inner side of left nipple. Sounds normal. Resonance good from above downwards to lower border of third rib or third interspace on right side; from that level down to two fingers' breadth below margin of cartilages is dulness. On the left side resonance downwards to level of heart's apex; from thence dulness downwards be-

yond the cartilages to a level of 1½″ above umbilicus. Posteriorly, the liver dulness encroaches on the chest; good breathing sounds over area of resonance.

"*Abdomen.*—Distended, resonant below the limits of dulness just described down to the pubes and to each iliac fossa, except in left iliac fossa, where is an area of semi-dulness, oval in outline, corresponding to an area of resistance to the touch, which is not so in right iliac fossa. Splenic dulness nil. The dulness in the epigastrium and hypochondria above described corresponds to a tumour which is felt in that situation, the margin of which reaches from the lower border of the ninth costal cartilage on the right side, passes horizontally inwards to middle line, and then passes vertically downwards to an inch and a half above umbilicus, and again extends horizontally to cartilages on left side, where it is lost. Surface smooth and firm. The edge on the right side is thick, on the left quite sharp and firm. There is also a small umbilical hernia, which he has only noticed for a fortnight.

"There is considerable œdema of the feet and ankles.

"November 20th.—Slept fairly; tongue furred, white, moist; very thirsty, good appetite; no nausea. Pulse 76; temp. 97° F. Urine deeply coloured by bile, sp. gr. 1012, acid, a slight cloud of albumen; griping abdominal pain.

"21st.—Slept badly; no pain; tongue clean, moist. Bowels open twice. Pulse 76.

"22nd.—Slept well; bowels open, painful; pulse 80; temp. 98°.

"24th.—Slight pain in belly; pulse 80; temp. 96·6°.

"December 1st.—He has been sitting up during the week; he feels easier; there was more difficulty yesterday in passing his water. A restless night. Tongue clean, moist, red; œdema of legs and feet has increased. Pulse 80; full and regular.

"2nd.—Slept well; no pain. Slight tenderness in right hypochondrium; vomited this morning after breakfast. Tea makes him sick. Pulse 80.

"4th (10.30 a.m.).—Slept very badly. This morning there is slight wandering; very severe pain over lower abdomen, right groin, end of penis, and down right thigh. He lies coiled up on his left side; micturition painful; a small stream, but it does not stop in passing; no albumen, bile-stained. Belly very tender; tongue parched, furred; thirsty, drowsy; bowels open. Pulse 130; resp. 30; temp. 106°.

"At 2 p.m.—Pulse 135; temp. 105·6°. Lies on his right side; knees drawn up; has passed water since the morning.

"10.30 p.m.—He is quite unconscious; temp. 102·4° F.?

"5th (2.30 p.m.).—Quite unconscious; pulse 144; temp. 105·4°.

"He died at six in the evening."

On two days I attempted to collect the urine. On the third the attempt was abandoned, as the patient would not save all his water. Urine collected from 8 a.m. on November 20th to 8 a.m. on November 21st was 2840 c.c. in quantity, acid reaction. On boiling and adding nitric acid a decided opalescence could be observed; a most distinct green reaction with Gmelin's test. Urea was 1·04 per cent. (estimated by Liebig's method), that is, 29·536 grammes were passed. Chlorides were 11·36 grammes (estimated after incineration with nitrate of potash).

Urine from November 25th to November 26th was 1430 c.c., acid; sp. gr. 1008·5, acid; reactions with heat and nitric acid and Gmelin's test, as before; urea 12·584 grammes. Urine from November 26th to November 27th, 2740 c.c. in quantity. At this point it was discovered that the patient was deceiving me, and I left off collecting the urine.

Examination eighteen hours after death.—Body of a universal deep yellow, and wasted; shins and feet œdematous. *Rigor mortis* well marked; the veins in skin covering iliac fossæ, Scarpa's triangle, and front of chest already shown by purple lines. No other signs of decomposition.

Well-marked xanthelasmic patches on eyelids, right ear (one of these is covered by a scab of dried blood), scrotum, bend of elbows, flexures of hands, neck, and shoulders. Along the furrows of the hands they are seen as long narrow lines. Over belly are three or or four spots covered with dried blood. No other ecchymoses on skin.

Calvaria natural; dura mater of a deep yellow; longitudinal sinus empty. Membranes and arteries of brain natural; so also ventricles, central ganglia, and rest of brain.

The inside of the belly quite warm. A layer of fat under skin. The cartilages are white, the ribs green. No fluid in either pleura. A greenish fluid in pericardium. The heart's apex is on the level of the lower border of third rib or upper part of third interspace. All the contents of the chest are pushed upwards.

The heart natural; aortic and mitral valves somewhat atheromatous. Lungs natural.

Tongue.—There is a yellow raised spot, the size of a mustard seed, on the dorsum. Along each side there are three or four irregular yellowish-white spots. They are sharply defined, varying in size from a split-pea to a sixpence. Two of those nearest the tip show a loss of substance, and they are also covered with a crust of dried blood. The lower part of the tongue shows two or three yellowish spots the size of mustard seeds.

The soft palate, pharynx, and lower parts of the œsophagus are free from yellow spots. Just where the œsophagus begins is a cluster of numerous yellow spots for about an inch. There is a yellow spot the size of a mustard seed at the fore part of the larynx, where the two vocal cords meet. The ridge of the bifurcation of the trachea shows a yellow spot. The rest of the larynx, trachea, and bronchial tubes, which were carefully examined, show no yellow patches to be confounded with xanthelasma.

The peritoneum, covering the recti on both sides, is speckled yellow with small patches. They are tolerably numerous, and in clusters. Other parts of the peritoneum do not show this appearance.

The great omentum is adherent to the distended bladder. To the left there is a swelling of the size and shape of a grown-up man's kidney. It is within the omentum, but is adherent also to the sigmoid flexure of the colon. Opened it is found to contain an hydatid cyst, which encloses very many small daughter cysts, varying in size from a mustard seed to a large marble.

The stomach and small intestines are natural. There are no yellow patches either on their mucous or peritoneal surface. The contents of the small intestines quite colourless. The contents of the large intestine are also white, and solid; but in many places they have a coating of clotted blood. The mucous membrane of the large intestine from the cæcum to the sigmoid flexure shows innumerable ecchymoses, very fine, and surrounded by fine injection. The rectum natural. Contents colourless, solid, unstained by blood.

The bladder is dilated; it holds about a pint of urine, almost black. This urine gives a decided cloud on applying heat and nitric acid. There is a well-marked green colour with Gmelin's test. It contains urea; something over 6 per cent.

Filling the pelvis between the bladder and the rectum, and making

the removal of these organs difficult, is a tumour the size of a child's head. It proves to be another hydatid cyst, but contains no daughter cysts.

On dissecting the porta of the liver, the portal vein is found to contain fluid blood. Swollen lymphatic glands surround the bile-ducts. The common bile-duct is quite free from colour; so also the cystic. The gall-bladder contains about an ounce of a slightly viscid, colourless fluid. This fluid is rendered cloudy by acetic and nitric acids; it is rendered more viscid by caustic soda. Gmelin's and Pettenkofer's tests repeatedly applied give no trace of colour. Half an inch above the opening of the cystic duct, the canal of the hepatic duct is completely obstructed by a swelling from within the liver. Just before the obstruction becomes complete, the duct contains a semi-solid mass of green pigment. The duct then passes over the wall of the tumour, and cannot be traced for about an inch. Dissecting beyond the tumour, the hepatic duct dilated to the size of a man's middle finger, and containing a colourless fluid, is opened. It receives many large openings of dilated bile-ducts, which also contain a colourless fluid. Following by dissection these ducts, it is found that those in the left lobe are more dilated than in the right. The scrapings from those ducts, in which the surface has been scraped immediately after their being opened, under the microscope show abundance of well-formed cylindrical epithelium. From those ducts which have been washed with water or touched with a sponge, no cylindrical epithelium can be seen in the scrapings.

Although the large ducts contain a colourless fluid and are quite white, yet this is not the case with the smaller. They are stained a pale yellow, and on pressing the liver a yellow fluid can be made to come out of them. No yellow spots can be noticed in any of the ducts opened.

Lying in the body, the left lobe of the liver passes for nearly two inches below the level of the right lobe. Taken out, the liver weighs 140 oz. Its colour is a deep olive-green, mottled with yellow; surface smooth. On upper surface of right lobe, near suspensory ligament, are seen two irregular spots, about the size of pennypieces, of a yellow colour; they exactly resemble the spots which may be made by pressure on a natural liver after death. A similar spot exists farther back on the upper surface. A cyst projects at the back of the liver, where it is attached to the

diaphragm, in the line of the suspensory ligament. The cut surface of the liver is granular; consistence tough.

There are three hydatid cysts in the liver. The largest, about the size of a cocoa-nut, occupies almost the entire thickness of the right lobe of the liver; it presses below on the hepatic ducts and above on the upper surface of the liver; it is within half an inch of the peritoneum, and causes the yellow anæmic spots before mentioned. Its contents are colourless; no daughter cysts. Another cyst, the size of an orange, lies immediately behind the first, and contains shrivelled-up membranes and a quantity of dark solid pigment. This cyst communicates directly with the hepatic duct by a short canal, about half an inch long, and of the diameter of a fourpenny-piece. The third cyst lies at the back of the liver, and projects to the surface where the liver is attached to the diaphragm in the line of the suspensory ligament. Its contents are colourless; no daughter cysts.

Spleen large; very soft. At one end, many yellow spots on capsule.

Kidneys large; cortex broad, swollen; white opaque bundles amidst a reddish tissue; perpendicular to the medulla. The pelvis and ureter of left kidney much dilated.

Aorta somewhat atheromatous; carotids and iliacs free from any appearance of atheroma or xanthelasma.

The liver-cells were examined microscopically within an hour of the liver being taken out of the body. Specimens were taken from many parts of the right and left lobes. The cells were all found to present much the same characters. Their size and shape not much altered. Where seen in groups somewhat difficult to make out outline of individual cells. Contents seemed to be chiefly pigment, arranged around the nucleus, which was large and contained nucleoli. There were but few fat granules; no large oil drops. There was no evidence of dissolution of the cells. Further, the liver was allowed to remain in the open air, without any means of preservation being used; nevertheless, liver-cells could be seen intact, even on the seventh day after death, when the liver gave plain signs of putrefaction. I have made similar observations even in the heat of summer, so that I am disposed to give but little attention to this statement of Oskar Wyss, viz. that in jaundice the liver-cells cannot be recognised if the liver be examined more than forty-eight hours after death.*

* Oskar Wyss, 'Arch. f. path. Anat.,' 1866, Bd. xxxv, p. 553.

Many pieces of the liver were hardened in spirit and chromic acid. Thin sections showed that the cells were no longer placed in rays around the hepatic vein, but had suffered a great disturbance, so that their arrangement could not well be described. The appearance of the cells themselves has already been mentioned. There was no increase of the connective tissue within the lobules. There was, however, a slight but decided increase of the connective tissue within the portal canals. The nuclear or lymphatic bodies seen in cirrhosis were not present. I have never before seen so slight an increase of the connective tissue of the liver in long-standing jaundice. I am disposed to attribute this to the nature of the obstruction. Here it was the uniform soft elastic pressure of the hydatid tumour that acted on the bile-ducts. This would cause much less disturbance in the connective tissue around the bile-ducts than would a rough angular body like a gall-stone. The greatest amount of increase in the connective tissue is seen in animals, around whose bile-ducts a ligature has been placed. Here the increase is so great that it amounts to a true cirrhosis, and is due, most probably, to the action of the ligature on the connective tissue of the liver in the portal canals.*

The xanthelasmic patches were hardened in spirit, thin sections made with a razor, coloured with carmine or logwood, and mounted in glycerine. On examining them with a low power, the cuticle over the patches was seen not to be thickened. In the deeper layers of the subcutaneous connective tissue were seen lengthened streaks of oil-globules. In some cases there was an accumulation of oil around the hair follicles, vessels, and other structures passing through the skin; in others, not. These structures, also, did not seem to share in the disease. The papillæ of the skin seem to be unaffected; that is, the collection of oil drops does not enter the papilla, although it becomes slightly curved towards it, as it passes underneath.

Examined with a higher power, and also in preparations teazed out with needles, the collections of fat drops are found to contain cells of various size. The smallest are not larger than red blood-corpuscles; round, oval, rhomboidal, and inclined to be spindle shaped. These smallest are free from granular contents, and con-

* See a paper by the author, 'St. Bartholomew's Hospital Reports,' 1873, vol. ix, p. 161, "On the Changes in the Liver which follow Ligature of the Bile-ducts."

tain only one or two nuclei. Those larger are slightly granular. The largest of all are four or six times the size of the smallest; they are round or oval in shape; apparently contain no nucleus, and are filled by fat; not in many drops, but in one large drop distending the cell. The cells are separated from one another by fibres of the connective tissue, which scarcely seem to be much increased. Some of the large fat-containing cells have a sinuous appearance; their shape being apparently determined by the fibres.

The foregoing description applies chiefly to the xanthelasma of the scrotum and tongue. The yellow patches on the peritoneum differed much from these in their appearance under the microscope. Sections were made from the peritoneum, dried, and also hardened in chromic acid. The yellow patch was then seen to be formed by a spindle-shaped cavity in the connective tissue under the peritoneum, containing large ordinary fat-cells, supported by areolaran network. These yellow patches would therefore seem to differ altogether in their nature from true xanthelasma, and to be a mere local accumulation of fat in the meshes of the connective tissue immediately under the peritoneum.

The view of the nature of xanthelasma, most in accordance with my own observations, is that put forth by Waldeyer,* for the first time in 1868. It is an overgrowth, in clusters, of the corpuscles of the connective tissue, followed by a fatty infiltration of the new cells. This statement is, I think, perfectly correct. I would only add that in this case I occasionally found the drops of fat within the cells to be so large that the cells might properly be called fat-cells. Also, that in many instances I found that the structures, such as hair follicles, vessels, &c., passing through the xanthelasmic patch, were not surrounded by an overgrowth of the cells; the canals would pass close to a spot of fatty infiltration, without showing any signs of accumulation around them.

Mr. Howse † has recently drawn attention to the likeness which there is between xanthelasma and atheroma, a point also noticed by

* See Virchow's 'Arch. f. path. Anat.,' 1871, Bd. lii, p. 318. I believe Dr. Murchison was the first in this country to arrive at nearly the same conclusions altogether independently of Waldeyer. See 'Transactions' of this Society, 1869, vol. xx, p. 187.

† Howse, reported by Hilton Fagge, 'Transactions' of this Society, 1873, vol. xxiv, p. 244.

the German pathologists,* who have written on this matter. The present case, however, does not bear out the analogy. It is true that in xanthelasma and atheroma there is a chronic process of cell-growth, followed by fatty infiltration of the cells. But here the resemblance stops. In this case there was no evidence of the process passing from a fatty infiltration into a fatty degeneration. In atheroma, the cells after awhile become dissolved, and their place taken by a mass of fatty detritus, in which a very few cells can with difficulty be made out. But here the cells, although distended with fat, were yet perfectly retained; nor could any evidence of calcification or crystallisation be met with, of which phenomena in xanthelasma Mr. Howse is at present the only observer. Patches of xanthelasma commonly last for years without showing any tendency to calcification or fatty usur. On the tongue and ear of this patient there were at death some signs of loss of substance in two xanthelasmic patches; but it would be well to exclude the possibility of mechanical injury before asserting a spontaneous rupture.†

* Virchow, 'Arch. f. path. Anat.,' 1871, Bd. lii, p. 504. See also Waldeyer, loc. cit.

† The following are among the most important references to xanthelasma:

Rayer, 'Traité des Maladies de la Peau,' 1835; 'Atlas,' planche 22, fig. 15, 2e édition.

Addison and Gull, 'Guy's Hospital Reports,' 1851, vol. vii, series ii, p. 265.

Pavy, 'Guy's Hospital Reports,' 1866, p. 227.

Erasmus Wilson, 'On Diseases of the Skin,' London, 6th edition, 1867, p. 773.

Hilton Fagge, 'Transactions' of this Society, 1868, vol. xix, p. 434; and 1873, vol. xxiv, p. 242.

Waldeyer and Jany, 'Sitzungsb. der schlesischen Gesellschaft für vaterländ. Cultur,' Juli, 1868; also in Virchow und Hirsch's 'Jahresb. f. 1869,' Bd. ii, p. 548.

W. F. Smith, 'Journal of Cutaneous Medicine,' 1869, vol. iii, p. 241.

Murchison, 'Transactions' of this Society, 1869, vol. xx, p. 187.

Hutchinson, 'Med.-Chir. Trans.,' 1871, vol. liv, p. 171.

Waldeyer, 'Arch. f. path. Anat.,' 1871, Bd, lii, p. 305.

Virchow, ibid., p. 504.

Hirschberg, 'Monatsbl. f. Augenheilkunde,' 1870, Bd. viii, p. 167.

Geissler, ibid., 1870, p. 64.

Manz, ibid., 1871, p. 251.

Kaposi, in Hebra's 'Hautkrankheiten,' second edition; in Virchow's 'Handbuch der speciellen Pathologie und Therapie,' Erlangen, 1872, p. 251.

Hebra, 'Atlas der Hautkrankheiten, 7 Lief.

Moxon, 'Transactions' of this Society, 1873, vol. xxiv, p. 129.

Pye-Smith, ibid., p. 250.

It will be noticed that a few hours before death the temperature of this patient rose to 105° and 106° F., which is a point in the case well worthy of note. A similar rise of temperature just before death has been noticed by Dr. Gee, in a case of jaundice from hypertrophous cirrhosis of the liver.* Wunderlich remarks that a rise of temperature in jaundice is always a bad sign.†

January 20th, 1874.

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17. *Primary columnar epithelioma of the liver.*

By W. S. Greenfield, M.B.

C. R—, a married woman, æt. 33, was admitted into St. Thomas's Hospital, under the care of Dr. Bristowe, on February 10th, 1874. She stated that she had generally enjoyed good health until September, 1873, at about which time she began to suffer from pain and a sense of fulness at the epigastrium, with occasional vomiting. At about the same time she suddenly brought up about a quart of fluid blood. The pain had gradually increased, and she had emaciated rapidly.

On admission she was very weak, considerably emaciated, sallow and cachectic looking, but without distinct jaundice. She complained of severe pain in the abdomen, especially towards the right side, not increased by food, and she vomited occasionally. The abdomen was somewhat distended, the superficial veins distinct and rather full. The *liver* was greatly enlarged, extending downwards to just below the umbilicus in the middle line, and nearly to the *crista ilii* on the right side; the hepatic dulness reaching upwards nearly to the right nipple in front and to a point two inches below the angle of the scapula behind. The surface of the organ was firm, and felt largely nodulated with smooth intervals; the edge was distinctly felt, somewhat irregular, but rather sharp. It was

* Gee, 'St. Bartholomew's Hospital Reports,' 1869, vol. v, p. 110.

† Wunderlich, 'Das Verhalten der Eigenwärme in Krankheiten,' Leipzig, 2te Auflage, 1870, p. 404.

extremely tender and painful on palpation. No ascites; glands in groin not enlarged. Other organs apparently normal. Bowels regular; catamenia regular.

She continued in much the same condition for two or three weeks, suffering from great pain, with occasional vomiting; and the emaciation progressing rapidly. About three weeks after admission she began to suffer from cough and dyspnœa. The tumour increased rapidly in size, and it was observed shortly before death that the lower border towards the left side was very hard and sharp. The distension of the superficial abdominal veins also became much more marked. Death occurred on March 23rd.

Post-mortem, twenty-four hours after death.—Body greatly emaciated.

The *liver* was found to be enormously enlarged, weighing nine pounds ten ounces and a half. It extended downwards in the middle line to within five inches of the pubes, and measured, vertically, nine inches. The enlargement appeared chiefly to affect the right lobe, the notch of the gall-bladder occupying the median line, whilst that of the suspensory ligament was displaced much towards the left. The anterior surface was rather flat, and scattered over the right lobe were numerous smallish nodules of new growth. Towards the left side a large white mass, seven inches in diameter, occupied the surface, involving the left and a part of the right lobe, and extending to the lower border in front. This larger mass was generally flattened, slightly elevated at its margin, where it bordered on the healthy liver-tissue, and presented numerous irregular depressions on its surface. Its outline was irregular, and had a festooned appearance, as if formed by the coalescence of a number of small nodules. This portion was very hard and fibrous, and formed the hard sharp edge felt during life. On section, the capsule was considerably thickened, and the mass of growth consisted of a dense, fibrous-like substance, parts of which contained cavernous spaces. The smaller nodules measured superficially from $\frac{1}{4}$ to $\frac{3}{4}$ of an inch in width, were of rounded outline, pinkish-white colour, very slightly elevated at the margin, flattish, and the larger ones slightly depressed at the centre. On closer examination the outline appeared crenated, and the surface had a veined or foliated aspect, produced by slight puckerings or depressed streaks. On section of the organ similar small nodules were found scattered throughout it, which were rounded and sharply outlined; many of

them appearing as if enclosed in a fibrous capsule. They were of uniformly opaque pinkish or yellowish-white colour, except in the case of the larger ones, in which translucent greyish patches were frequently seen near the centre. The smaller nodules were of moderate consistence, and exuded a creamy juice on scraping. Small portions only were kept for microscopic examination.

No fluid in the *peritoneum*.

Stomach and *intestines* natural throughout.

Spleen, *supra-renal* bodies, &c., also natural.

Kidneys pale, smooth, apparently healthy.

Uterus healthy, but displaced towards the right side by a cyst originating from the left *ovary*, which nearly filled the pelvis. This was an ordinary simple cyst, containing only clear fluid; and there was no other sign of disease about the ovaries. Glands in abdomen not enlarged.

Lungs large, weighing together 51½ oz. At the apex of the right lung were some old fibroid induration and a caseous nodule; and scattered throughout both lungs were what appeared to be tubercular granulations. In addition to these were numerous small round tumours, varying in size from that of a pea to a kidney-bean; vascular, rather soft, and of pinkish-white colour. None of these were actually in the pleura, although many were near it.

The *bronchial glands* were rather large and white, but not notably altered in appearance. All the mediastinal lymphatic glands seemed somewhat enlarged.

Heart weighed 8 oz.; it, together with the pericardium, was natural.

Microscopical examination of sections from portions hardened with bichromate of potash shews characters of considerable interest (Pl. VI). The smaller nodules from the liver appear, under a low power, to consist almost entirely of a system of tubules irregularly arranged, separated only by a very small quantity of fibrous stroma, and bearing a striking resemblance to sections of the cortical substance of the kidney deprived of Malpighian tufts. The tubules are for the most part cylindrical, and of tolerably uniform size, or varying within not very wide limits; they are seen cut transversely, obliquely, or longitudinally, and some of them are of considerable length. They are formed by a layer, usually single, of spheroidal or columnar epithelium, and most of them have a distinct central lumen, of variable width. The stroma separating them

DESCRIPTION OF PLATE VI.

Plate VI illustrates Dr. Greenfield's case of Columnar Epithelioma of the Liver. (Page 166.) From drawings by himself.

FIG. 1. Is taken from a section of a nodule in the liver.

2. Is taken from the margin of a small nodule in the lung, and shows columnar epithelium apparently lining the pulmonary alveoli.

3. Shows epithelial débris from the lung, resembling normal columnar epithelium. Under $\frac{1}{8}$th objective.

4. Is taken from a lymphatic gland in the mediastinum. $\frac{1}{4}$th objective.

Figs. 1, 2, and 3 are from unstained sections; fig. 4 stained with logwood.

Fig. 1.

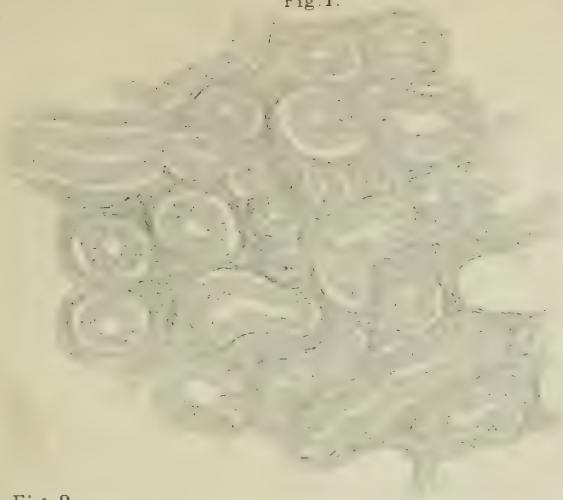

Fig. 2.

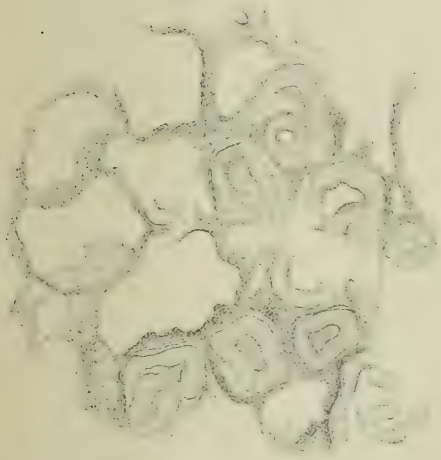

Fig. 3.

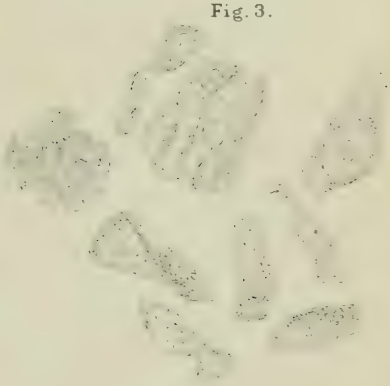

Fig. 4.

forms in some parts distinct wide fibrous bands, from which radiating offshoots are given between the tubules; but for the most part it is scanty and composed of nucleated hyaline material, forming a sheath for the tubules. Although without very definite arrangement, in some places the tubules lie side by side for some distance, and in others radiate from a central core of connective tissue. Tubules imperfectly formed are also seen, sometimes apparently isolated, at others given off from the sides of larger tubules. The circumference of these nodules is sharply defined, and enclosed by circularly disposed layers of long nucleated cells, which appear to have originated by the division and compression of the liver-cells.

In the nodules larger than a pea a much greater diversity of structure is found. The basis of the new growth is a more or less perfectly developed connective tissue, which in many parts is myxomatous and in large quantity. Scattered throughout this are a large number of spaces of various shape and size, tubular or of irregular form, lined with epithelial-like cells. The character of these cells varies widely; some of the spaces are lined by a single layer of cubical or polygonal epithelium, and closely resemble acinous glands; others by columnar cells, in one, two, or several layers; others are of angular outline, and filled by a convoluted mass, evidently produced by the infolding of a layer of columnar cells; whilst yet others are completely filled by cells of various shape, usually, however, with an outer layer of columnar type. In some parts, moreover, an infiltration of the stroma with similar rounded or flattened cells is observed.

In the larger nodules and more advanced portions of the new growth the stroma is found much increased in proportion and more fibrous in character, and the extremely dense and hard structure found in the left lobe of the liver was composed entirely of fibrous tissue-forming loculi, which contained only the fattily degenerated remains of epithelial cells, and in some cases only a few fat granules, the direction of the fibres alone indicating what had been a space lined with cells.

The stroma was everywhere vascular, and in the larger and denser portions small extravasations of blood were not unfrequent.

In the liver tissue adjacent to the nodules of new growth there appear frequently bands of young connective tissue, in which are seen one or two more or less perfectly formed tubules, and the sur-

rounding liver-cells generally show for a certain distance a multiplication of nuclei, and in some places multiplication by fission of the cells themselves. These bands of connective tissue seem to constitute the earliest form of the new growth seen, and they appear to send out lateral processes in which the new tubules are formed. Farther than this I have not as yet been able to trace the development of the new growth with any certainty. It is possible that some of the tubules seen are normal bile-ducts.

On examination of the mediastinal lymphatic glands, the normal tissue was found to be almost entirely replaced by a structure almost analogous to, but not in every respect identical with, that in the liver. It consisted of irregularly shaped spaces of very variable size, formed by one or more layers of cylindrical epithelial-like cells, containing one or two large nuclei arranged around them; in many of these the layer of cells had become, as it were, folded inwards upon itself frequently, thus forming a very complicated structure. The stroma was much less in quantity, and usually formed in great part by fusiform cells.

In the lung the nodules of new growth were found to be of very similar structure, but more closely resembling that of a glandular polypus of the rectum. They consisted of a large number of closely packed alveolar spaces, lined by a layer of cells of the columnar type, usually in a double row, and closely resembling normal intestinal epithelium, both in arrangement and modifications of form. This layer was also in most cases folded inwards upon itself, so as to form a complex arrangement. In the outlying portions of the nodules the pulmonary alveoli were frequently lined with a layer of columnar epithelium, which appeared as if it had grown from the alveolar wall. On careful examination, however, several tubules were found growing in the alveolar wall, and bursting into the alveolus. It seemed, however, doubtful whether the stroma of the new growth was not in great measure formed by the walls of the pulmonary alveoli, as they closely corresponded in size and structure.

In no case was the epithelium found to be ciliated.

The case appears to me to present numerous points of interest, both from the rarity of its occurrence, and also as regards the question of its origin. A case in many respects almost identical with the present was shown by Dr. Whipham to the Society, in 1872, and reported upon by Dr. Cayley and Mr. Arnott.

There seems to be little doubt that the new growth comes under

the class described by Cornil and Ranvier as *columnar-* or *cylindrical-celled* epithelium. I may refer to Dr. Whipham's able description, and the valuable remarks of Dr. Cayley and Mr. Arnott, for the discussion of various points of interest in relation to this question.

There are, however, one or two points to which I would call attention. In the first place, there can be little doubt that here the new growth originated in the liver, and that the growth in the mediastinal gland and the lung must be regarded as secondary. In Dr. Whipham's case there was some little doubt, from the fact that the ovarian cyst which there existed could not be properly examined. In the present case, however, although there was also an ovarian cyst, it can hardly be questioned, both from its nature and the absence of affection in the glands in the abdomen, that it was not the starting-point of the disease.

Another point of interest is that the new growth in the liver offered so considerable a variety in the character and arrangement of the cells; whilst in the lung it was of much more uniform structure, and the cells invariably columnar, whilst the stroma was scanty or absent. A part of this difference may be due to the greater freedom of growth, and absence of pressure; possibly also to the greater vascularity of the pulmonary tissue.

It seems to me probable that the structure described and figured by Rindfleisch, as primary adenoma of the liver, was really similar to this; as in many of the smaller nodules in this case the structure appears to resemble closely that which he describes.

It would also seem probable that the new growth takes its origin from the bile-ducts, but I am not prepared to say that this can be conclusively shown, and the question will be found fully discussed in works on pathology. It is important to note that both in the lymphatic glands and the lung the new growth presented the same essential characters as in the liver.

Clinically, the case was one of "cancer" of the liver, and it is not improbable that the occurrence of this particular form of new growths may have been frequently overlooked, in the absence of systematic microscopical examination. I have, therefore, described the naked-eye appearances at some length. *May* 19*th*, 1874.

V. DISEASES, ETC., OF THE GENITO-URINARY ORGANS.

(A) KIDNEYS, BLADDER, ETC.

1. *Sarcomatous carcinoma of the left kidney.*

By THOMAS S. DOWSE, M.D.

W. P— was admitted into the Central London Sick Asylum, Highgate, 19th July, 1873. Died 1st November, 1873.

From the history it appears that his health had been exceptionally good until two years ago, when he complained of a dull, aching pain in left lumbar region, which extended around the loins. This was never acute, and for weeks together he would be free from it. There were occasional attacks of vomiting, accompanied with dyspeptic symptoms. He became an inmate of King's College and Charing Cross Hospitals. Whilst in the former he had an attack of left hemiplegia. Upon his admission into this Asylum he presented the signs of some vital organic disease. Although there was no very marked emaciation of body, extreme prostration was manifest in all his movements. The symptoms of left hemiplegia were incomplete, but there was defective motor power in both the left leg and arm. The respiratory murmur and heart-sounds were normal. The superficial veins of the abdomen and thorax were extremely prominent and tortuous, and the former was unilaterally distended by what appeared to be a solid tumour in the left hypochondriac and lumbar region. It was diagnosed as a hard, immovable, non-adherent mass, extending from the median abdominal line anteriorly to the spine posteriorly, having a uniformly even and rounded contour. The abdominal cavity gave signs of containing fluid. The urine was at times scanty, loaded with blood-cells and *débris*. The lower extremities were œdematous. His appetite was good, and, with the exception of occasional pains, he described himself as feeling quite well,

On the 10th of September he became partially collapsed, and vomited a large quantity of dark-coloured stercoraceous material. Urine and fæces passed involuntarily, and he appeared to be dying; but he rallied from this attack, and continued tolerably well until the 1st November, when he became almost suddenly comatose, and expired in a few hours.

Post-mortem twenty-four hours after death.—The brain, including the central ganglia, was healthy. The right temporo-sphenoidal lobe was somewhat softened, in all probability from the blocking up of the Sylvian artery, but no trace of emboli could be detected. The substance of the brain fairly merited the term dropsical, and upon section presented a watery, shining appearance, arising from defective venous circulation. Upon opening the thorax the lungs only half filled the thoracic cavity. There was fluid on both sides, and the right lung was adherent to the chest-wall by recent inflammation. The upper lobes were quite healthy and crepitant, but the lower ones were congested from blood stasis. The heart and its valves were healthy. The liver was large, and its substance granular. The gall-bladder was quite free from bile, and full of numerous dark, hard, cholesteric masses. The spleen was of normal size and consistence.

Upon removing the intestines in the space allotted to the kidney was found a large solid growth, and connected with it by other abnormal growths were the pancreas, upper part of the colon, and the duodenal part of the small intestine. The same material had invaded the connective tissue in relation with the spine, and surrounding the great vessels. The tumour when removed from the abdomen was found to weigh about six pounds, and presented a rounded and somewhat lobulated outline. It was invested by a strong fibrous membrane, which permeated its interior, and mapped it out into distinct divisions. The cut surface presented various appearances, and its substance differed equally with its colour. In some parts it was of a cheesy nature, in others it broke down readily, and had a pultaceous consistence, whilst in others, again, it appeared to consist almost entirely of fibrous stroma with small cellular organizations. The secreting structure of the kidney was almost obliterated. From its general appearance and rapid growth it appears to be of the nature of sarcomatous carcinoma. There were no secondary deposits in liver, spleen, or testicles.

November 4th, 1873.

2. *Cystic tumour of the right kidney, associated with echinococcus cyst.*

By W. Cayley, M.D., for W. Bathurst Woodman, M.D.

I am indebted to my colleague, Dr. Woodman, for the opportunity of showing this specimen, which was taken from the body of a male infant, æt. 7 months, who was a patient under his care at the North-Eastern Children's Hospital.

The preparation consists of a multilocular cystic tumour, the size of a fœtal head of the full period. It has a firm fibrous capsule, and at one part a thin layer of renal tissue is spread out over the surface, showing that it originated from the right kidney.

The cysts of which the tumour is composed vary in size from quite small ones to others which would contain several fluid ounces. The larger ones communicate with one another, and have a general appearance of having originated in a dilatation of the pelvis and calices of the kidney. They have for the most part a smooth lining membrane, and dark bloody contents. They are in part occupied by intra-cystic growths, which consist of soft fungoid cauliflower-like and villous masses, often of considerable size; and besides these larger growths are innumerable very minute ones of similar nature. At one point is a dense hard nodule, the size of a walnut, which on section is seen to be composed of tough fibrous tissue, with a few extremely minute cysts, containing gelatinous matter scattered throughout. I am unable to find any traces of the ureter in the specimen as I received it.

On microscopical examination, I failed to detect anything resembling the structure of echinococci cysts. The intra-cystic growths were composed of delicate connective tissue crowded with leucocytes, and in places a layer of pavement epithelium could be seen covering them. The hard nodule was composed of much denser and more fibrous connective tissue.

Dr. Cobbold kindly examined the specimen, and did not find any vestiges of echinococci.

The following report of the case has been furnished to me by Dr. Woodman:

"Alfred S—, æt. 5 months, was brought to the North-Eastern Children's Hospital, on the 8th September 1873. His mother, who suckled him, stated that her other children were fairly healthy. There was nothing unusual attending either his birth or gestation. She noticed, however, that his belly was bigger, even at birth, than the bellies of her other children. For some three months his general health was but little affected. At a later date she said she had noticed that he made very little water.

"For about six weeks or two months before she brought him to the hospital, the abdomen had increased in size very rapidly; she noticed it was very hard; the child's bowels were either very constipated, or he had attacks of diarrhœa; his stools were thin and watery. He had a disagreeble and urinous odour, and his arms and legs began to waste a little. I had the child stripped, and made the following note:

"Height and general development equal to majority of children of same age. Dentition advanced, as he had cut the two central upper incisors, and one lower one; other teeth (lateral incisors) seemed likely to appear shortly. The arms are rather thin and flabby, so are the cheeks and nates. The legs are slightly œdematous. The abdomen is enormously distended, and tympanitic. Superficial veins, especially on right side, large and distended. Owing to the tympanitis and tenderness, no satisfactory physical examination could be made; but I detected some fæcal masses, and a semi-solid body, occupying nearly all the right half of the abdomen, which I imagined to be a hydatid cyst attached to the liver. This opinion, which proved afterwards to be erroneous as to the attachment of the cyst, and only partially true as to its character, was founded chiefly on its apparent painless growth, and the semi-solid fluctuation. I advised the admission of the child into the hospital: to this the parents demurred, and treatment was commenced by mild saline laxatives and carminatives, together with enemata of soap and water. Ten days afterwards (September 18) the tumour was plainly recognisable, and combined auscultation and percussion disclosed an almost globular tumour occupying all the right side of the belly, extending from the ribs to the pelvis, and considerably to the left of the umbilicus. It could be lifted from the pelvic end; but neither Dr. Sansom, who kindly saw the case, nor I, could distinguish any clear interspace between it and the right lobe of the liver. Posteriorly the whole right flank

was dull on percussion; the left resonant. Dr. Cayley, who kindly saw the case on September 3rd, was able to separate it pretty clearly from the liver, and therefore considered to be in all probability some kidney growth; he inclined to the belief of its malignancy. Up to October 20th, the treatment was chiefly directed to the child's general health. It was then admitted an in-patient of the hospital.

"At a consultation, at which Drs. Sansom, and Proctor (of York), Mr. Tay, Dr. Woodman, and one or two others were present, it was resolved to tap the tumour. It was now clear that it was not attached to the liver. It was also evidently composed of several cysts, and the idea of hydronephrosis was obvious. One of the most prominent cysts was tapped by the aspirator, and ʒiv of blood-stained fluid, of specific gravity 1010, were drawn off; cholesterin, a few hooklets, striated membrane, and two or three shrivelled echinococci were found by microscopic examination. *No urea was found in this specimen*, although two or three different methods of examination were adopted. There were a few blood-pigment crystals (Hæmatoidin), and on boiling the sediment which remained with caustic soda, one or two more hooklets were found. Unfortunately a student in the London Hospital threw away the slides.

"The child seemed relieved by the puncture, and on November 3rd was sent home on account of supposed measles, which, however, turned out to be only roseola. It was, therefore, readmitted, and at intervals of some six to twelve days three other operations were performed. On the second and subsequent tappings, although there was more blood and blood-colouring in the fluid drawn off, there were no further signs of hydatids, the fluid did not keep (the first fluid kept for some weeks without much decomposition), and now it contained urea largely (2 grs. in every 100 grs. by the calcic hypobromite process) and other constituents of urine (chlorides, phosphates, sulphates, &c.). On the last occasion three cysts were punctured, and nearly 8 oz. of fluid were removed. On all these occasions (except the first) urea was found in the fluid. The child appeared rather better for these tappings, but did not take its food very well, and just before the last was attacked with hooping-cough. From this, or rather the broncho-pneumonia of low type accompanying it, the child died a few days after the last tapping.

"On opening the abdominal cavity the intestines were found

pushed over to the left. The liver was quite healthy. There were no signs of peritonitis, except that the peritoneum in front of the tumour (which proved to originate in the right kidney) was adherent to it by slight adhesions at the points where it had been punctured. The cysts which had been emptied had all filled again, except perhaps the first tapped. The whole tumour was handed over to Dr. Cayley for examination, nothing being done to it except an incision at the posterior part, into what appeared to be remains of true kidney structure.

"As regards the combination of a true hydatid cyst, containing echinococci, with a cystic form of hydronephrosis, although this must, unfortunately, rest only upon my testimony on account of the slides being lost, yet it receives incidental confirmation by the fact of the first fluid *not* containing urea, whilst the contents of the other cysts in subsequent tappings all contained urea in abundance. Further, on referring to my note-book I find an account of a child, aged about three years, under the care of Dr. Patrick Fraser, in the London Hospital, in 1864, who was tapped for a hydatid supposed to be connected with the liver. In this abundance of echinococci and striated membrane were found, and the fluid was limpid, of low specific gravity, almost free from albumen, and contained chlorides largely. The child died of some other disease without any further operative measures, and the bulk of the tumour was found to consist of a soft form of cancer (encephaloid), which had grown from the right kidney, of whose true structure there were scarcely any remains. This mass weighed about four or five pounds, and the liver was perfectly healthy and not adherent to it. I do not think *this* case was ever published, although I believe a similar one was published by Dr. Fraser in one of the medical journals."

December 16*th*, 1873.

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3. *Polypoid growths in the bladder and vagina.*

By Howard Marsh.

On October 7th, 1871, J. P—, æt. 2 years, was brought as an out-patient to the Hospital for Sick Children. About twelve months before, when she was just a year old, her mother had noticed a dark pale fleshy-looking substance, about as large as a grape, projecting from the vulva. There was neither bleeding, pain, nor difficulty of micturition. As this substance grew rapidly larger a surgeon was consulted, who drew it down and tied it round its base, and in a few days it fell off. In the next two months similar growths formed and were tied; but others constantly appeared, now in clusters and bunches. These also were ligatured as soon as they were discovered, so that when I saw the child the ligature had been used on six separate occasions. There was complete incontinence of urine, and latterly there had been attacks of pain and straining, followed by slight bleeding, and an offensive discharge from the vagina. For three months the child had been losing appetite and flesh, though she was still fairly nourished.

On examination, under chloroform, a large bunch of growths like polypi was found just within the vulva. Some filled the vagina, while others could be felt projecting from the bladder through the urethra, which they so far distended that, at first, its canal was mistaken for the vagina. These growths were of various sizes, two or three were as large as grapes; others club-shaped and flattened, with narrow pedicles, were not more than two or three lines in diameter. In appearance, depending on their amount of blood, they ranged from the paleness of a common nasal polypus, to the darkish purple of a nearly ripe grape. All seemed covered with mucous membrane. When the left index finger was passed into the rectum, and pressure made at the same time above the pubes, an irregular solid mass, of the bulk of a small hen's-egg, could be felt, like a growth from the posterior wall of the bladder projecting into its cavity. Very slight hæmorrhage resulted from this examination. In consultation it was agreed that any further removal of the growths would be useless. They had been already carefully and skilfully

tied on six occasions, but recurrence had always quickly followed; and as there was no doubt they were developed not only in the vagina but also in the bladder, no more radical attempt to extirpate them seemed likely to be either successful or even safe. From this time the child gradually lost flesh and strength, incontinence of urine remained, and the attacks of pain and straining became more frequent. Anodynes, so far as they were safe, were given, and disinfecting lotions were used. Death took place at the end of four months; that is, sixteen months from the commencement of the disease.

At the *post-mortem* examination all the organs except the bladder and vagina were found to be healthy. The condition of these latter is so fully described in the following report by Mr. Beck that I need add nothing to his statements. *February 17th*, 1874.

Report by the Committee on Morbid Growths on Mr. Marsh's specimen of polypi of the bladder and vagina.—The specimen submitted to us for examination consists of the bladder, uterus, and vagina of a child aged two years, on the mucous membrane of which are large masses of soft polypoid growths. Those on the bladder are limited to the base and neck, while those on the vagina are almost confined to the anterior surface, where it is in contact with the bladder. Between the bladder and vagina is a dense solid mass, about one inch in thickness, corresponding to the surfaces from which the polypi are growing. On the left side this projects from between the bladder and vagina, forming two rounded masses on the surface of the specimen. Where the bladder has been cut open through the smaller polypoid growths the wall is found to be greatly thickened. The inner surface is composed of the thickened mucous membrane from which the polypi sprung. The muscular coat is hypertrophied, and the bundles of fibres widely separated by tissue, having the appearance to the naked eye of white fibrous tissue. On the outer surface is the edge of the rounded swelling before mentioned, which has the appearance where cut through of dense fibrous tissue. The tumour is nowhere sharply defined. It seems to be a general hypertrophy of the connective tissue of the part.

We have examined microscopically: 1st. The larger polypi projecting into the bladder. 2nd. The smaller polypi and the tissue from which they are growing. 3rd. The hypertrophied wall of the bladder at the same spot. 4th. The rounded fibrous swelling pro-

jecting from between the bladder and vagina. 5th. One of the larger polypi from the vagina.

Mr. Butlin, who first examined the growths after removal, has kindly favoured us with a note of the appearances he found, and our observations agree almost exactly with his. The large polypus from the bladder is found to be composed almost entirely of small round cells of a lymphoid type embedded in a basis, homogeneous or nearly so on the surface, but becoming more and more fibrous towards the pedicle, until at the base the fibrous tissue forms the bulk of the growth, the cells being only scattered here and there either singly or in groups. The whole growth is tunnelled in every direction by large blood-vessels; near the surface they form loops of dilated thin-walled capillaries; deeper down small arteries with a well-developed muscular coat are seen in abundance. No epithelium is to be seen on the surface of the larger polypi. A section of the smaller polypoid growths shows the same appearances as before described, but in the hollows between the polypi there is a small columnar epithelium two or three layers thick, somewhat resembling in arrangement the normal bladder epithelium, but much smaller and more regular in shape. This seems to suggest the idea that in their earliest stages the growths were covered by columnar epithelium—at least in the bladder. The perfectly smooth surface of the villi and the entire absence of any signs of ulceration favour the same view. The ease with which the epithelium is lost from such growths both during life and by *post-mortem* maceration will readily account for so small a quantity being found. The mass between the bladder and vagina, and the rounded swellings at the side, are composed merely of structures normal to the part, viz., abundant white fibrous tissue, with bundles of non-striated muscular fibre in some parts, and groups of fat-cells in others.

On examining one of the growths in the vagina it is found to differ from those in the bladder in containing large numbers of small spindle-cells, arranged in layers parallel to the surface; but here again all varieties of tissue are found, between the almost pure spindle-celled growths on the surface and the fibrous tissue at the base. No epithelium was found here, as it was impossible to get at the smaller growths without spoiling the specimen.

We should, therefore, look upon the specimen as an overgrowth of the connective tissue of the parts implicated, forming the solid mass between the vagina and bladder, and implicating the walls of

those organs and the mucous membrane, and on the surface forming soft vascular polypi. There is no tissue present in any part of the specimen, which may not result from a simple overgrowth of the normal tissues of the part. MARCUS BECK.

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4. *Parts removed after death from a case of stone in the bladder, prostate, and urethra, after an attempt to remove the stone by operation.*

By TIMOTHY HOLMES.

IT is so rarely that we see cases of very large stone at the present day, thanks to the greater diffusion of the rudiments of surgical knowledge, and to the diminished horror of operations which has followed upon the introduction of chloroform, that it may be worth while to record a case in which the stone had been allowed to grow to such a size that it was found impossible to remove it entire by lithotomy, and, indeed, impracticable to deal with it in any other way; and the case is further interesting in consequence of the impossibility of diagnosing before the operation the size of the mass.

The patient, æt. 43, was admitted into St. George's Hospital, January 31st, 1874, from Northamptonshire, with the following history:—Nine years ago he attended a medical man for irritability of the bladder, as he says; he remained under treatment a short time. He has since suffered more or less, and a month ago (December, 1873) he went under the care of a surgeon, who advised him to go to the hospital. On admission he complained of pain in his thighs, scrotum, penis, and perinæum, and a constant desire to make water, sometimes three or four times the hour. In the act of micturition it occasionally stopped and then began to flow again. The water was ammoniacal, a slight trace of albumen, and a considerable amount of blood-corpuscles.

On examination, without chloroform, a stone was met with projecting into the urethra, and the sound could not be passed farther.

The prostate was felt from the rectum enlarged and very hard, obviously distended with a mass of calculus.

A day or two afterwards he was placed under the influence of chloroform, and an attempt made (of course, unsuccessfully) to press the stone back with a lithotrite; but with some little management an ordinary sound was passed above the stone into the bladder. The sound, however, could not be moved in the bladder, which was attributed to the fact that it was grasped and locked in by the stone in the urethra, consequently nothing could be felt in the bladder; nor was anything to be felt by palpation from the abdomen, and the prostate was too large and too deeply situated for the finger to pass beyond it. I was consequently entirely in the dark as to the quantity of stone in the bladder; but I confess that, judging from the fact that the man had no incontinence of urine, nor, as far as I could perceive, any grievous distress, I believed the vesical part of the calculus not to be very large. The mass outside the bladder appeared about the size of a large horse-chestnut.

On February 5th lithotomy was performed. The staff was passed in above the stone, the median raphe of the perinæum divided in its whole extent, and the finger passed in above the stone. It was then perceived that the bladder was tightly applied on all sides of an enormous calculus, only the projecting smaller end of which had previously been felt. All attempts to dislodge this mass, or even to get the finger or any instrument behind it, were vain. The perinæal incision was extended into the anus, and the rectum was divided as high as possible, and an attempt made to thrust the stone down into the lower opening of the pelvis, but it could not be moved, nor would traction, however forcible, drag it from its bed. No attempt could be made to break it, since the instrument could not be got to its farther side, either laterally or in the antero-posterior direction. Consequently it was necessary to abandon the operation, and the patient sank next day.

On *post-mortem* examination the kidneys were found to be granular on their surface, and both were greatly absorbed; the pelvis dilated, and the ureters enlarged nearly to the size of the small intestine. The bladder was somewhat thickened, much inflamed, and still slightly adherent to the stone where the finger and instruments had not penetrated. The stone was a great pear-shaped mass, weighing 3620 grs. = 7 oz. 4 dr. 1 scr., the length of which was 3·8 inches, its width 2·8, and its thickness 2·6 inches. When the parts had all

been cleared from the pelvic bones, it was found just possible to push the stone out from the pelvis through its lower outlet; but this would have been mechanically impossible before the removal of the soft parts, and with the additional obstacle of the lithotomy forceps.

Remarks.—The interest of this case is mainly surgical, and as such it is undoubtedly of considerable value, inasmuch as this is the first instance within living memory, as far as I can discover, in which such a catastrophe has occurred at St. George's Hospital. One of the consulting surgeons of St. George's did, indeed, meet with a case many years ago in private, in which he was compelled from the size of the stone to abandon the operation, and in which he ascertained, by *post-mortem* examination, that the stone was too large to pass through the lower opening of the pelvis. Why the high operation was not preferred to perinæal lithotomy in that instance I am not aware. In the case before us, the hypogastric operation did not appear, before the operation, to be in any way indicated, since all the stone which was perceptible lay in the perinæum; though no doubt the high operation would have been the only one by which the mass could in any way have been extracted entire. In the contracted condition of the bladder, however, I do not think so large a mass could have been removed without extending the incision into the peritoneal cavity, or lacerating the peritoneum.* The introduction of a lithotrite or any other instrument to break the stone would have been impossible in this case, so tightly was the stone wedged in, and so completely did it fill the bladder. And, besides all this, the whole urinary tract was in so advanced a condition of disease that any surgical operation must necessarily have been fatal.

The pathological interest of the case depends mainly on two circumstances. The first is, that a stone could grow to so enormous a size, and could so fill the prostatic urethra as well as the bladder without producing any incontinence of urine, or any intolerable distress. It has, indeed, often been remarked, in cases of very large calculus, that the symptoms have appeared to be less than in those of more moderate size. And it has also been observed that there is sometimes more difficulty in detecting a large

* Sir H. Thompson believes that the rectovesical operation is, on the whole, the best for the removal of very large stones from a contracted bladder ('Practical Lithotomy,' 2nd ed., pp. 115-16).

stone by means of the sound than a small one. Thus Sir H. Thompson refers to a case, under his own care, in which the patient, who died without operation, had two calculi in the bladder weighing together 12½ oz., and so closely locked together as to form for practical purposes only one stone. In this case, Sir H. Thompson says, "I was convinced from his symptoms that he was the subject of calculus; but, still, though repeatedly sounded by me and by one or two others, distinct evidence of the fact was at first wanting, for a clear note could not be obtained. A sensation indicating the presence of mortar-like matter was felt on the instrument passing through the neck of the bladder, and after that, nothing."* And it has also often been observed that the projection of a stone of moderate size from the bladder into the prostatic urethra does not necessarily cause incontinence of urine. But I confess that I was surprised to see that in this case, though the neck of the bladder was practically obliterated, yet the water was retained. I remember some years ago seeing a female child in whom a large stone, filling the bladder and projecting into the urethra, had produced such complete incontinence of urine that the case had been long under treatment as one of juvenile enuresis.

The second pathological feature in the case is the great distension of the ureters produced by the obstacle to the outflow of urine from them. Such distension is occasionally found in old cases of stone to an extent proportionately to the accompanying cystitis; but in this instance the dilatation of the ureters and pelvis of the kidneys seemed merely mechanical, and was caused, as I believe, simply by the great mass which lay at the mouth of both tubes. The contrast between the dilated ureters and the passively contracted, and in some places adherent, bladder was very striking; nor was there the least evidence of inflammation in any part of the urinary organs above the bladder. *February 17th*, 1874.

* 'Practical Lithotomy,' &c., 2nd ed., p. 116.

5. *Bladder containing a pouch, which opens into a dilated coiled tube (a third ureter), communicating with the right kidney by a smooth walled cavity, which is shut off from the remaining portion of the kidney.*

By Fletcher Beach.

Emily Elizabeth D—, æt. 5 months, was brought to the Children's Hospital, Great Ormond Street, on the 17th of January, 1873, as an out-patient of the late Dr. Phillips. The mother stated that the child seemed quite healthy up to about six weeks previously, when one day she thought that the child's water seemed to scald her, and she appeared to strain in passing it. A week afterwards it was noticed to be "thick." Next day she could not pass it at all. On the day after, however, urine was passed, which the mother described as looking like "thick humour."

Dr. Phillips, on examining the child, thought he saw something prolapse, and sent her into the hospital for examination. The bladder was sounded by Mr. Parker, the house-surgeon, but nothing abnormal could be felt. Some purulent urine came away at the time. The child was taken home, and on the three following days seemed queer, but passed her water, which still continued "thick." On the fourth day she became faint and died.

The *post-mortem* examination was made two days afterwards at the house of the mother of the child.

The abdomen having been opened, the bladder was cut into, and found to be filled with a thick, whitish fluid, looking like "watery pus." On sponging this away a small pouch was seen at the bottom of the bladder, through which exuded by a small opening more fluid of the same character. The pouch was cut into, and found to be filled with the same kind of fluid as that above described. This was sponged away, and at the bottom of the pouch was then seen an opening about the size of a threepenny piece, into which a probe could be passed for some distance. The kidneys were then searched for. The right was found to be enlarged, and by its lower part to communicate by a tube coiled upon itself with the

channel through which the probe had been passed. The left kidney was normal.

On examining the specimen, it is seen that two ureters open naturally into the bladder, just behind the pouch above mentioned, and that the coiled tube is a third ureter opening below into the pouch, and above into the lower part of the right kidney by a cavity about the size of a small apple, having smooth walls, and which is shut off from the remainder of the kidney. Both the cavity and the ureter were filled with the same fluid as that which filled the pouch and bladder. *May 5th*, 1874.

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6. *Bladder and prostate from a case in which lithotomy had been performed twenty-four years before.*

By C. Hilton Fagge, M.D.

Joseph L—, æt. 29, died in Guy's Hospital, of laryngeal phthisis and renal disease, on January 21st, 1874. He had said that he had lithotomy performed upon him when five years old.

The bladder was of an elongated form, which was very peculiar and different from the normal shape of that viscus. The prostate had in the left side of its floor a very distinct cicatrix. This formed two oval depressions, separated by a kind of ridge. The caput gallinaginis lay to the right of the median line. The vesicula prostatica was patent, and, indeed, appeared to admit a probe rather farther than natural. The trigone had a normal appearance. The vesiculæ seminales and vasa deferentia and testes were healthy.

Of the kidneys, one weighed $9\frac{1}{4}$ oz., the other $1\frac{1}{4}$ oz. They were both in an advanced stage of epithelial nephritis; their surface mottled, their substance speckled with white, red, and yellow. The only difference was that the larger of the two was smooth, the smaller rough, on its surface. It appeared to me, however, that the difference in their size was too great to be attributed merely to a difference in the stage of the recent disease, and that the one must have

been hypertrophied, the other atrophied, before this disease had commenced. Is it possible that the calculus which formerly existed could have caused wasting of one kidney? Its pelvis seemed to be quite free from any obstruction. *May 19th*, 1874.

(B) MALE GENITAL ORGANS.

7. *Hydatids of the spermatic cords.*

By Howard Marsh.

The specimen consisted of the two spermatic cords of a man, æt. 46, who died in St. Bartholomew's Hospital, with extensive hydatid disease within the abdomen. Each cord was occupied by an hydatid tumour. In the fresh state these tumours were of the size and shape of a hen's egg, placed just below the external abdominal rings; and, as they evidently contained fluid, presented the appearance of hydroceles of the cord. On one side the cavity lodging the hydatids communicated directly with the peritoneum, and was apparently the sac of an old hernial protrusion into the funicular portion of the peritoneum. On the other side no communication with the peritoneum could be traced.

May 5th, 1874.

(C) FEMALE GENITAL ORGANS.

8. *Fibroma of the ovary removed by operation.*

By Lawson Tait.

Mr. Lawson Tait showed a fibroma of the ovary removed by operation from a patient, æt. 47. It had been in existence

seven years, had increased rapidly during some months, giving rise to much ascites. When fresh it weighed within two or three ounces of nine pounds. No trace of the ovary of the side to which the tumour was attached could be discovered at the time of the operation.

Microscopic examination revealed no trace of ovarian tissue, and nothing beyond parallel bundles of fibres, with here and there a small loculus of immature cells, as if the tumour were on the point of becoming cancerous. *January 20th*, 1874.

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9. *Carcinoma of ovarian cyst and adjacent organs.*

By J. Knowsley Thornton, M.B.

E. W—, widow, æt. 35, was admitted into the Samaritan Hospital, under the care of Mr. Spencer Wells, in November, 1873. She had noticed an increase of size in June, and applied for admission at St. Thomas's Hospital, but not being admitted was tapped by her medical attendant at home. He drew off nineteen pints of fluid, and after this she was quite her natural size, no solid substance remaining. Within a week, however, she began to fill again, and with the return of the fluid came constant sickness, pain in both groins, and in pubic region, with œdema of legs. For two years before she noticed the tumour she had been menstruating for two or three days every week, but after the tapping she became regular for three months, and it then ceased altogether.

On November 25th I tapped her in the Samaritan Hospital, and drew off twenty-one pints of brownish-grey, slightly viscid fluid, alkaline, sp. gr. 10·15, and with the chemical and microscopic characters of ovarian fluid. Some solid part of the tumour remained on the right side and over the pubes.

Vaginal examination.—Situation of uterus normal; os and cervix normal; sound entered two inches and a half; no pelvic tumour to be felt.

She returned to the hospital on January 4th, 1874, stating that

she began to fill again at once after getting home, suffering from her old symptoms, augmented by obstinate constipation and constant pain in the sacral region. The uterus was now found to be movable, but not so freely as formerly, and behind it in the space of Douglas was a round substance, about as large as a pigeon's egg, and several smaller nodules. These did not seem to be connected with the uterus nor with the tumour. Suspicion of malignant disease being excited by the general symptoms of the case, ovariotomy was not attempted, and as her sufferings were considerable, she was again tapped. This time only thirteen pints of similar fluid were obtained, much more solid remaining than at the last tapping. Her symptoms were in no way relieved by this tapping; emaciation was very rapid, and she sank and died January 21st.

Careful microscopic examination of the fluid failed to detect any carcinoma elements.

Post-mortem, January 22nd.—Body extremely emaciated.

Abdomen.—The abdominal wall was found so firmly adherent to the whole of the front of the ovarian cyst that it was separated with difficulty, and it then became evident that the lower part of the cyst was carcinomatous. The cyst was of the left ovary. The right ovary was represented by the mass felt during life behind the uterus, now as large a hen's egg. The fundus of the uterus was enlarged and carcinomatous. The small nodules felt during life were found to be nodules of carcinoma growing round the rectum. One small nodule, about as large as a small marble, was found in the muscles of the abdominal wall. None of the organs affected by the disease were grown together or matted by it; the large mass representing the right ovary being easily lifted out into its proper position. The enlargement of the fundus and its being packed in by these nodules accounted for its *partial* fixity.

It is worthy of note that the nodule in the abdominal wall was close to the tapping puncture.

The other organs of the body were all entirely free from the disease.

Microscopic examination of the various organs affected showed a structure rich in large irregular cells with many nuclei and but little stroma. The farther from the pelvic part of the tumour the sections and scrapings were taken, the more the carcinoma elements became mixed with the usual ovarian cyst structure, and the more was the infiltration confined to the outer part of the cyst-wall. The

muscles of the abdominal wall were infiltrated with carcinoma elements to some distance round the nodule found there. All trace of ovarian structure was lost in the right ovary, which was simply a large soft mass of carcinoma. The fundus of the uterus showed similar elements mixed with its normal structures, but here again the disease seemed to come from without, and the mucous membrane was not affected. The same was the case with the rectum, most of the nodules round it lying rather in the loose cellular tissue than actually growing from the rectal wall.

The question of interest is, Where did the carcinoma commence? Certainly not in any of the mucous surfaces, for they were free from disease, though the outer surfaces were already a mass of carcinoma. Did it attack all the organs at once, or, starting in one, invade the others secondarily? If the latter was the method of progress, why were the organs not bound together, but each a separate carcinomatous tumour, as it were? If the state of fatty disintegration going on in the cells is any guide to their age, then those in the nodules round the rectum were the oldest. I believe the disease began in the cellular tissue there, and gradually attacked the other affected parts from without, spreading through the all-pervading connective tissue.

Those who believe carcinoma always commences in epithelial structures may think the peritoneum the more likely seat of commencement; but against this is the form of carcinoma, and also the fact that the cellular tissue outside the peritoneum held separate masses and apparently the oldest. *February 17th*, 1874.

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10. *Dermoid ovarian cysts.*

By J. Knowsley Thornton, M.B.

This specimen was removed by ovariotomy by Mr. Spencer Wells, on January 27th, 1874, and a full report of the case will be found in the 'British Medical Journal.'

H—, æt. 8, residing in San Francisco, California. In October,

1873, an abdominal tumour was discovered, and the two physicians who saw her advised her friends to take her to England, to Mr. Spencer Wells, as they believed the tumour to be ovarian.

Sir W. Jenner saw the child in consultation with Mr. Wells, and tapping with the aspirator was decided on. She was tapped on January 8th, 1874, and 26 oz. of clear amber-coloured fluid, with the ordinary characteristics of ovarian fluid, were drawn off. Careful chemical and microscopical examination confirmed the ovarian diagnosis.

The cyst soon began to fill again, and ovariotomy was decided on; and the operation was performed on January 27th. The tumour was free from adhesions and easily removed, and the patient made a rapid recovery.

The tumour consisted of one large thin-walled ovarian cyst, lying to the front; and behind this was a solid mass about the size of a flattened orange, made up of the enlarged and flattened ovary, with a dermoid cyst springing from it, and lying between it and the ordinary ovarian cyst, or rather in the cavity of the latter.

The external surface of the ovary showed a number of enlarged Graafian vesicles protruding from it; and the internal surface, where the dermoid portion arose, also showed some still larger Graafian vesicles, one of them as large as a pistol-bullet, having its walls much thickened and a papillary prominence at one part, which on section proved to be covered with true skin with short hairs growing all over it. The smaller vesicles were carefully searched for ova, but none could be found.

The thin wall of the larger cyst was covered externally by a thin layer of squamous epithelium, and the inner surface was lined by several layers of irregularly arranged oval epithelial cells, the rest of the wall being formed of fibrous tissue, like that found in the stroma of the ovary.

The anterior wall of the dermoid cyst (*i.e.* the posterior wall of cyst already described) seemed to have no epithelial covering on its dermoid surface, except posteriorly, where the structures to be described took their origin.

There was a large projection into its centre, from which grew long hair matting into balls, which, along with fatty matter, filled up the cyst-cavity. Section of this projecting mass showed it to be one of irregular shape, with some small hollows in it (? alveoli, for teeth), entirely covered with cartilage; outside which was another covering of true skin lying on its adipose and areolar bed.

Fibrous septa divided partially this dermoid portion of the tumour into chambers full of hair and fat. Probably more than one Graafian vesicle was concerned in its formation, these septa being the remains where they had broken into one another, and this view was supported by the absence of epithelial lining from so large a portion of its wall.

The chief points of interest in this specimen are—

1. Its presence with such structures as bone cartilage, &c., in so young a child.

2. The coexistence of a number of enlarged Graafian vesicles in a state of the common form of cystic degeneration with one (other than the large dermoid cyst) evidently passing to the dermoid condition.

3. The presence of a large ordinary cyst in front of the dermoid one. (This seems a common feature in these cases. See plate in Mr. Spencer Wells' work on the ovaries.)

4. The absence of ova in all the Graafian vesicles examined.

February 17th, 1847.

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11. *Ovarian tumour from a girl, aged ten years.*

By Edward H. Dickinson, M.A. Oxon., M.B.

This case, apart from its occurrence at such an age, presents, I think, many points of considerable clinical and pathological interest. It is also one of extreme rarity, partaking as it does to a certain extent of a dermoid character, and partly coming under the head of the "colloid-cystoma," or what Rindfleisch is inclined to term "*struma ovarii*, in Virchow's sense of the word *struma*."*

The history of the case is, briefly, as follows:

Elizabeth H—, æt. 10 years, school girl, admitted into the medical wards of the Northern Hospital, Liverpool, under my care, on October 31st, 1873, complaining of swelling and uneasiness in the abdomen.

* Rindfleisch, 'Path. Hist.,' vol. ii, p. 184, New Syd. Soc., 1873.

The child was unusually forward and intelligent for her age, and the following particulars, embodying the previous history of the case, are taken almost exactly from her own lips, and subsequently confirmed in all respects by her mother.

She says about twelve months ago she noticed a pain in the right side of the lower part of the belly, and a few days later she recognised a slight swelling in the region where the pain was felt. This swelling, when first perceived, was about the size of a hen's egg. Shortly afterwards the pain became worse, and frequently shot down the leg. There was no heat nor redness about the swelling, which continued to increase gradually in size, accompanied by intermittent pain more or less till she came into hospital. At this time the girth of the abdomen at the level of the umbilicus was twenty-five inches.

The child says that a short time before she noticed the pain in the abdomen she received a severe blow, which caused considerable discoloration over that part of the body. The tumour does not seem to have exceeded the size of a small apple until within the last six months. The bowels have been, as a rule, somewhat costive; once only there had been an attack of diarrhœa. The appetite is fair except when the pain is severe.

The girl is of an average height for her age, and well formed; sallow complexion and light hair, with a very bright and intelligent but anxious expression of countenance. She has rather a strumous and cachectic appearance, but no external marks of scrofula are visible. The catamenia have never declared themselves.

Till the commencement of the present illness the general health had been good.

Says she has become much thinner of late, and, indeed, the whole body is now considerably emaciated.

There is nothing very worthy of notice in the family history. The girl is an only child. The father, a sailor, was drowned at sea. The mother has had fair health all her life, but looks delicate, and is in poor circumstances. One or two near relatives died of phthisis.

Respiratory, circulatory, and digestive systems all tolerably normal. Tongue clear, pulse 80 and regular, urine copious, and freely passed, light coloured, of normal specific gravity, and non-albuminous. Ordered nourishing diet, Ol. Morrhuæ, and Syrup of Iodide of Iron.

Abdomen (report on admission).—There is a large tumour which occupies about two thirds of the abdominal cavity, and inclines rather more to the right than to the left side. Percussion shows it to be almost continuous with the hepatic dulness, there being only a narrow finger's breadth of comparative dulness intervening. The surface of the swelling appears round, firm, and smooth, and no nodules are perceptible at this time. The mass is solid and non-fluctuating, and but very slightly movable.

Diagnosis, on admission, presented considerable difficulties. At first the swelling seemed continuous with the liver dulness, but subsequently percussion revealed a distinct tympanitic interval. At this time there was no ascites present. The tumour then slightly shifted position, and presented some points of clinical value which at one time almost tempted me to think that it might be renal, and of a malignant character, though there were no urinary symptoms to determine such a diagnosis. Several medical men of experience saw the case with me whilst in the hospital, and more than one felt satisfied that it was a case of enlargement and disease of the mesenteric glands. One of my surgical colleagues, believing the tumour to be ovarian, suggested operation, or at any rate wished to make an exploratory incision. Operative interference, however, of any kind, and even the administration of chloroform to assist examination, was strongly objected to by the mother, and I believe that, mainly owing to a dread of our doing anything in this respect, she removed her child from the hospital on December 15th of last year, promising, however, to bring her back again if the disease became any worse. Whilst in my ward the girl's general health had decidedly improved to a considerable extent, and she had put on flesh, the tumour remaining *in statu quo*. The abdominal girth was twenty-five inches, same as on admission, and there was little change in its appearance during the seven weeks she was in hospital.

Readmitted March 11th, 1874.—I lost sight of this case altogether for a space of three months, when after some inquiry I discovered the mother's whereabouts and saw the child. Poverty of living, squalor, and bad air, had been her portion in the mean time, and when I again took the girl into the hospital I found her in a very much worse condition than when she went out in December. She had a very pale and drawn countenance, and the whole body was intensely anæmic and very greatly emaciated. The abdominal

swelling had increased, the girth at the umbilicus being now twenty-seven and a half inches. It was very hard, and a distinct nodule the size of a small hen's egg was perceptible below and to the left of the umbilicus.

The umbilicus itself was bulged outwards, projecting to the size of a walnut, shining, painful, and covered with red stellate vessels; a smaller projection was attached to its left side, about the size of a horse-bean.

Superficial venous congestion well marked, especially on the right side, over the whole abdomen, which was extremely tense and tender on palpation. A distinct sulcus was to be felt between the tumour and the liver, though the dulness on percussion was continuous in that region, as, indeed, it was all over the abdominal surface except in the flanks and left hypochondrium. Some small amount also of ascites was evidently present. The child was in a sinking condition at the time of readmission, and treatment was confined to anodynes and stimulants. The appetite was quite gone, the tongue remained clean, as it had done throughout, and the urine and bowels were in a normal condition.

The pain in the abdominal region was very severe at all hours of the day and night, and sleep (except when obtained by sedative draughts) was snatched at intervals. The child could hardly bear to be touched, so little attempt at examination could be made. She sank exhausted on the evening of April 9th, 1874.

Post-mortem examination, made twenty hours after death.—Body greatly emaciated.

Lungs and heart normal.

Abdomen very much distended, with the umbilicus protruding to the size of a hen's egg, red and vascular, with a second smaller tumour the size of a marble springing from its left side. Superficial abdominal veins strongly marked. On opening into the abdominal cavity a quantity of sero-sanguineous fluid issued forth, and a soft brain-like mass with blood-clots interspersed bulged through the incision. On completely laying open the abdomen the above-named mass was found to cover, as with a veil, the whole of the abdominal organs, and was to all appearance a secondary infiltration of the omentum and mesentery. On raising this veil of omentum a tumour of the right ovary, about the size of a child's head of four years old and weighing five and a half pounds, was seen rising from

the pelvic cavity. To the upper and anterior surface of this tumour the omental mass was partially adherent.

On section and to the naked eye the tumour was found to consist in the first place of a large exterior cyst enclosed in a firm fibrous capsule. The contents of this main cyst were composed of a fibrous or rather fibro-cartilaginous stroma, in which were embedded innumerable smaller cysts or loculi, varying in size from a small marble to that of a millet-seed or less. Some of these minor cysts were filled with a thick white sebaceous material, in which some very fine loose hairs were found coiled up. Others, and these formed the majority, contained a semi-transparent gelatinous or colloid matter. Interspersed irregularly throughout the whole bulk of the tumour were found spicules and ragged portions of ossified structure, some of them of considerable size (an inch or more in length). These were not simply calcareous masses, but true bone with Haversian canals, &c. No teeth were found nor any definite epidermic structure, the hair-tubes lying, as before stated, quite unattached in the sebaceous cysts. No secondary deposit was observed elsewhere, and all the remaining viscera and organs of the body, including the uterus and left ovary, were normal and healthy in every respect.

Microscopic appearances.—A portion of the tumour was hardened in alcohol and typical sections taken from it and stained with carmine. These sections showed very distinctly the general matrix of fibrous and connective tissue, supporting here and there in its substance small circumscribed patches of a true cartilaginous character. Under a high power the intimate structure of the ovarian stroma was still more plainly observed. Entangled in the fibrous network surrounding the various loculi were noticed numerous cells, some of them round and nucleated, others elongated or spindle-shaped, these being doubtless on their way to transformation into fresh tissue.

The sebaceous-looking matter contained in some of the cysts proved on examination to consist almost entirely of flat epithelial scales, packed closely together. Embedded amongst these were a number of very fine loose hairs, some granular and molecular matter, and crystals of cholesterine.

The semifluid colloid material found in others of the cysts was seen under the microscope to be formed of disintegrated fatty and granular matter, with numerous more or less perfect epithelial scales. It seemed to be of a similar nature to that contained in the first-

DESCRIPTION OF PLATE VII.

Plate VII illustrates Dr. Dickinson's case of Ovarian Tumour. (Page 192.) From drawings by himself.

FIG. 1. A portion of the tumour seen on section, showing the fibrous matrix, in which are embedded numerous small cysts or loculi of various dimensions. Some of these (marked *a*) contain white sebaceous-looking matter; others (*b*, *b*) were filled, when first cut into, with a semi-transparent colloid material. At the right-hand corner (at *c*) is seen projecting from the surface one of the spicules of bone which are found scattered here and there throughout the whole mass of the tumour.

Figs. 2, 3, 4, and 5 illustrate the microscopical appearances of the tumour and omentum partly adherent to it.

FIG. 2. General section of tumour as seen under a low power (100 diameters), showing two cartilaginous nodules supported by loose areolar tissue. To the left is seen the margin of one of the loculi.

3. A similar section under a high power (300 diameters), showing the structure of the fibrous stroma, consisting of small round cells, elongated or spindle-shaped cells, and fibrous tissue, amongst which are scattered at intervals sundry small loculi. At the upper edge is seen part of a cartilaginous nodule, and to the left a portion of one of the cysts, into which is introduced, as a specimen, some of the colloid material it originally contained, consisting of epithelial scales, large fatty granules, and broken-down molecular débris.

4. A portion of the omentum found adherent to the surface of the tumour, showing a blood-vessel, immediately surrounding which are seen an enormous number of small round nucleated cells, apparently leucocytes. (300 diameters.)

5. Shows the contents of one of the sebaceous or dermoid cysts, consisting of fine loose hairs of a pale yellowish colour, epithelial scales, round granular corpuscles, some molecular matter, and a few crystals of cholesterine. (300 diameters.)

Fig. 1.

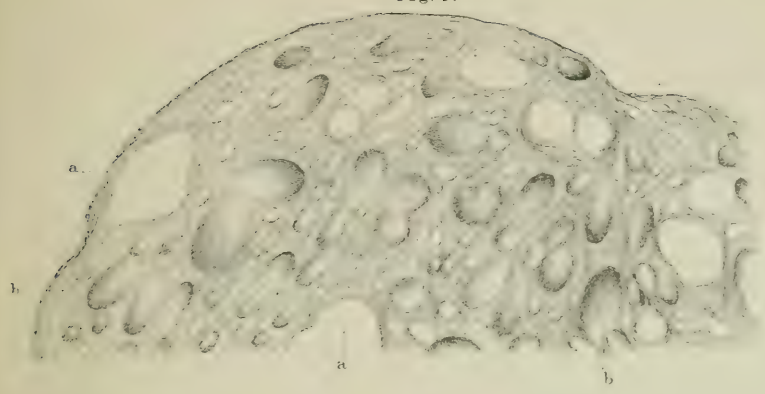

Fig. 2.

Fig. 3.

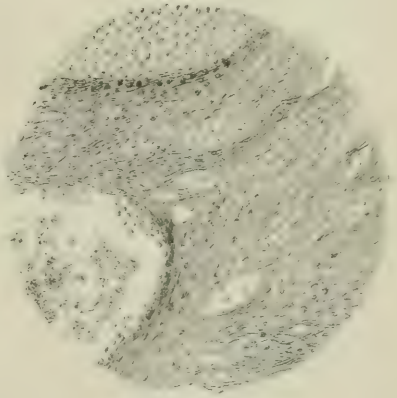

Fig. 4

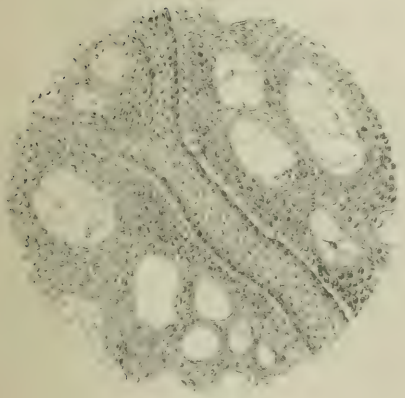

Fig. 5.

named class of cysts, being apparently only sebaceous matter which had undergone colloid degeneration.

The infiltrated substance of the mesentery and omentum also seemed to consist chiefly of degenerating fatty cells. A portion, however, of the fibro-cellular web of the omentum presented, when stained and examined microscopically, a curious and interesting appearance. Around the walls of the blood-vessels were seen aggregated innumerable small nucleated cells, which from the manner in which they had imbibed the carmine proclaimed themselves of protoplasmic structure. The majority of these were, I think, certainly to be regarded as leucocytes, which—as the result of inflammatory stasis in the peritoneal substance—had migrated from their normal channels into the perivascular spaces and surrounding tissues.

Amongst these leucocytes were also noticeable sundry elongated connective-tissue-corpuscles, together with some larger and paler round cells having well-marked nuclei, evidently epithelium from the vessels. Such are, I think, the chief general and microscopic characteristics of this case, but in order to more perfectly illustrate them I have appended drawings which I made very carefully from typical specimens of the structure and contents of this very uncommon form of ovarian cyst (Pl. VII). *May 5th*, 1874.

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12. *Transplantation of cancer to uterine mucous membrane secondary to cancer of the ovary.*

By James F. Goodhart, M.D.

Emma J—, æt. 26, died on October 10th, 1873. An ovarian tumour had been removed on September 15th, 1873. It was a multilocular one. She went on well except for cystitis, which set in two days after. Latterly she had peritonitis.

At the autopsy both pleura were studded with small tubercles, and the lungs also were similarly affected. They were all opaque whitish-yellow in colour, very soft, and yielding a copious milky

juice. They were most thickly set towards the bases. They did not appear to have any special relation to blood-vessels. No plugs were found in the vessels, no embolic patches, and no pneumonia.

Examined microscopically, the nodules were all interstitial; they occurred in the fibrous septa, and the cellular growth which composed them ran in among the vesicles, and thickened their walls in the neighbourhood of the disease. Each was composed of a growth of small roundish nuclei, not unlike an interstitial pneumonia. Vessels and bronchi seemed equally to be surrounded.

Heart $8\frac{1}{2}$ oz., healthy.

The ileum had two or three small cancer-tubercles under the peritoneum. The liver weighed $47\frac{1}{2}$ oz., and also contained in its substance a few secondary cancer-nodules.

The peritoneum near to the pedicle of the diseased ovary was studded with cancer-nodules of varying size. The pedicle itself was a mass of new growth, the stroma of which was on the whole sarcomatous, but the cells in the meshwork were of an epithelial type (Pl. VIII, fig. 3). They were large, round, and mono-nucleated. The growth did not occupy the whole of the broad ligament. Half an inch of Fallopian tube was left between it and the ovary. The calibre of this part of the tube was dilated, and full of cream-like juice.

Uterus large. On the posterior wall of its cavity was a fleshy looking mass, sessile, but projecting from the surface. It had a soft vascular appearance, and yielded copious juice on section. It was apparently a thickening of the mucous coat. The mucous membrane elsewhere was soft, and undergoing a cancerous change; uterine muscle looked healthy. Microscopically, however, this was not so (Pl. VIII, fig. 2). The muscular tissue is extensively infiltrated by a cellular growth. The mucous coat is much thickened, has entirely lost all appearances of columnar epithelium, and is replenished by a free growth of epithelium-like cells, similar to those of the growth in the ovary. Mesentery large and white. Lumbar glands cancerous.

Spleen $5\frac{1}{2}$ oz., pulpy; kidneys $12\frac{1}{2}$ oz., one had a cancerous nodule in it. The right ovary was large and contained one or two small cancer-nodules upon it, and also in its substance.

The interest of the case lay in the facts—

1st. That it was a good specimen of auto-inoculation of cancer, parallel to a case brought before the Society by Dr. Moxon, and

DESCRIPTION OF PLATE VIII.

Plate VIII illustrates Dr. Goodhart's case of Cancer of the Uterine Mucous Membrane after Cancer of the Ovary. (Page 197.) From drawings by himself.

FIG. 1. Section of mucous membrane of uterus and part of muscular wall (vertical). 1-inch objective.

a. Cancerous mucous membrane.

a'. Limit of mucous membrane.

b, *b*. Muscular coat infiltrated with cells.

c. Deeper part of muscular coat, more healthy, but still having collections of nuclei here and there.

2. Portion of the same under $\frac{1}{6}$th-inch, showing epithelial cells and their relation to a large blood space.

3. Appearance of the primary growth in the pedicle of the ovary. $\frac{1}{6}$th-inch.

Fig 3.

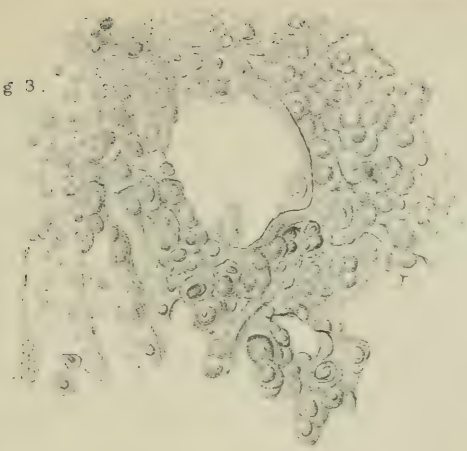

Fig. 2.

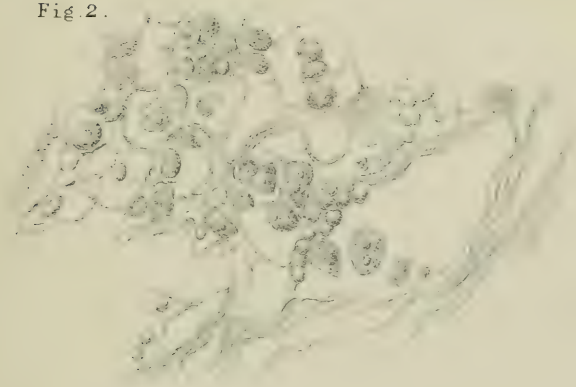

Fig. 1

published in a late volume of the 'Transactions,' where cancer about the larynx had been carried down the bronchi and had grown there.

2ndly. It was a good specimen of the power cells in abnormal irritative states have upon presumably healthy cells. Cells of bad habit from the ovary traverse the Fallopian tube, and so affect the nutrition or life action of the cells of the uterine mucous membrane that they throw off all allegiance to their former type, grow ovary tumour-cells henceforward, and not uterine mucous-membrane-cells.

3rdly. This so-called spermatic influence of one cell upon another was lost or not manifested in the lung, for there the growth was more like an interstitial pneumonia than resembling the original ovarian tumour. *May* 19*th*, 1874.

13. *Fibroma of the ovary.*

By James F. Goodhart, M.D.

The occurrence of fibrous tumours in the ovary is thought to be a very rare one, and some tumours called ovarian fibromata have been thought to be due to growths of fibrous tissue in the broad ligament. The specimen now exhibited to the Society is of interest because it is so small that its relations can be accurately determined, and it may be seen that it grows directly from the free or epithelial surface of the organ, that it has no connection with the broad ligament, and on section is shown to spring from the outer layer of the ovarian stroma, that part characterised as "tunica albuginea" by old writers, and as the condensed external layer of the proper ovarian stroma by Waldeyer.

It occurred in a woman, æt. 42, who died from granular disease of the kidneys. She had several fibrous tumours in the uterine wall, &c., as well as one in the ovary, which was about $1\frac{1}{2}$ inch in diameter.

I have since then met with a second case precisely similar to it.

May 19*th*, 1874.

VI. DISEASES, ETC., OF THE OSSEOUS SYSTEM.

1. *Traumatic separation of the epiphysis of the great trochanter.*

By Jeremiah McCarthy.

A little girl, æt. 8, was brought to the London Hospital with a large swelling over the sacrum. The house-surgeon on duty considered the child too ill for examination, and death ensued within a few hours after her admission.

The substance of the post-mortem examination was as follows: Body well nourished, left foot everted (this may have been the result of accidental position on the table); an abscess in the right sterno-clavicular articulation. Pyæmic pericarditis, pleurisy, and pneumonia. A large extra-peritoneal collection of pus in the pelvis, which was connected along the tendon of the pyriformis muscle with another abscess round the neck of the left femur. The trochanteric epiphysis was completely detached from the shaft, but held in position by tendinous attachments and the reflections of the capsule. The history of the case, as subsequently ascertained from the mother, was that the child, while playing about the room, had fallen on her left side, about a week before being brought to the hospital. That nothing more had been noticed until, on the Saturday night following, the elder sister, while washing the child, observed a lump over the left hip, and called her mother's attention to it; that the child was kept in bed in consequence, but two or three days later seemed to have such difficulty in breathing that her father directed that she should be taken to the hospital; that even then the child walked holding by her mother's hand for about half a mile, and did not complain of any pain, and that until she fell, although not a strong child, she had never had any illness. The case is very similar to the well-known case recorded in Sir Astley Cooper's work on dislocations and fractures.

The specimen is preserved in the museum of the London Hospital. *October* 21*st*, 1873.

2. *Comminuted fracture of the atlas and fracture of the odontoid process of the axis.*

By Jeremiah McCarthy.

J. H—, æt. 33, was admitted into the London Hospital with the history that while at work unloading a ship he had fallen head-foremost down the hold.

On admission he was perfectly sensible. There was complete motor paralysis of both upper and lower extremities; diaphragmatic breathing, priapism, and total loss of sensation below the level of the third rib. There was no perceptible irregularity of the vertebræ, but there was some swelling at the nape of the neck, and he complained of pain when pressure was made at this part or over the upper part of the sternum. It was supposed that there had been a fracture of the spinal column about the fifth or sixth cervical vertebra, and as on this supposition some fibres of the brachial plexus must have escaped injury careful attempts were made to ascertain if any parts of the upper extremities were sensitive, but no satisfactory results could be obtained. On the following day his condition as to respiration, priapism, and motor paralysis, was unchanged, but he had completely regained sensibility in his upper extremities, trunk, and upper part of thighs. During the afternoon his temperature rose rapidly, he became violently delirious, and died the next day.

Sixty hours after admission, at the *post-mortem* examination, the spinal column was removed from the third cervical to the third dorsal vertebra. There was no fracture. Between the periosteum and dura mater, opposite the fourth cervical vertebra, was a very slight ecchymosis. The cord was carefully examined without a trace of laceration, contusion, or extravasation, being discovered. On examining the upper part of the spinal column it was found that the atlas had been broken into five fragments, and that the odontoid process has been fractured transversely at the base. There was, however, no displacement, all the fragments being held in position by ligaments or periosteum, and there was no evidence of any compression of or injury to the medulla oblongata or contiguous part of the cord. The lungs were extremely congested, the other

viscera normal. The symptoms in this case appear to have been due to concussion of the spinal cord, the facture of the atlas and axis an accidental complication. *October* 21*st*, 1873.

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3. *Myeloid tumour of femur.*

By R. J. Godlee.

This specimen, which I am enabled to bring before the Society by the kindness of Mr. Berkeley Hill, is one of a tumour developed in the outer condyle of the femur of a youth, æt. 18, and is particularly interesting from the fact that it was mistaken for some time for a white swelling of the knee, and was, in fact, sent up as such to University College Hospital, under Mr. Hill's care, in June of the present year. That there was some excuse for this was plain from the appearance of the front of the joint, but on closer examination it was at once evident that the swelling was completely confined to the upper, in fact to the upper and outer, part of the knee, the bony prominences of the tibia and fibula being perfectly well defined, and on placing the fingers on the most prominent part slight but very distinct pulsation was perceptible.

The history of the case was briefly as follows:—He first felt pain in the knee in November, 1872, which was attributed to rheumatism, but which was not sufficient to oblige him to keep his bed before February of the present year. Swelling commenced at about the same time as the onset of the pain, but increased with much greater rapidity up to the time of admission (June). The limb was then semiflexed, only slight movement of flexion and extension were possible, these, however, being limited not so much by the pain they caused as by the peculiar shape of the femur. There was scarcely any tenderness, and the pain when the part was at rest was, on the whole, very insignificant. All the muscles of the limb were remarkably wasted, including the glutei, and one or two glands in the groin were enlarged.

The thigh was amputated in the middle third, and on opening the

joint the cartilage was found entire, but remarkably thin and semi-transparent, and expanded over the soft and very elastic tumour occupying the position of the external condyle. In the notch between the condyles the tumour formed one or two gelatinous prominences into the joint behind the synovial membrane. On making a longitudinal section, the growth, which was absolutely confined to the bone, was found to extend a little to the inner side of the middle line and upwards for a short distance into the shaft, the compact tissue of which was completely eroded at the lower part. The colour was a reddish-buff, mottled with brighter red patches, and with here and there darker spots and small cysts, the results of old hæmorrhages. The shaft for some distance higher was inflamed, the redness being intense and patchy.

Under the microscope it presented typically the characteristics of myeloid growth.

The result of the operation was in all respects satisfactory, and two months afterwards the glands in the groin were distinctly smaller and the muscles were regaining their natural size.

October 21*st*, 1873.

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4. *Pistol-shot wound of skull.*

By T. W. Nunn, for Fredk. W. Spurgin, Surg. D Division Metropolitan Police.

The specimen consists of a portion of the skull in which the bullet was found embedded.

On September 22nd, 1873, A. O— was found dead in his room ; he was in a half-sitting position on the bed, his legs hanging down. His body had fallen on to its left side across the bed. An extensive gunshot wound was seen behind the right ear. His right hand, partially clasped, was thrown across his lap, and an old-fashioned pistol, rifle-grooved, was lying in close proximity to his hand.

On *post-mortem* examination the lobe of ear was found partially

torn across, and there was a large wound near mastoid portion of temporal region. The tissues round were charred, and were ingrained with powder, and the bony parts, including the articulation of jaw, were completely smashed; from this chasm ran three extensive fissures in the skull, one extending across the occipital region, one forwards across the frontal bone, one at the base of skull across the sphenoid bone.

The brain near the external wound was completely pulped by the force of the explosion. The bullet had taken a straight course through the right hemisphere of brain, passing just below the superior longitudinal sinus, and was found flattened and lodged in skull near the junction of the left parietal and frontal bone.

The wound of the internal table corresponded closely with the shape of the disfigured bullet, while the outer table is detached to the extent of many times the area of the internal wound, thus illustrating the formation of the large "wound of exit" in gunshot injuries. *November 4th*, 1873.

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5. *Removal of nearly the whole of the lower jaw for necrosis in a child, followed by the formation of new bone replacing the old jaw and admitting of free motion.*

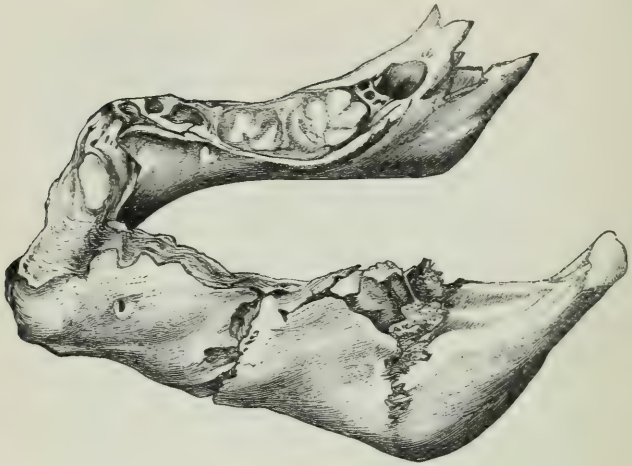
By Waren Tay.

The patient, who was exhibited, was a boy, æt. 4. He was admitted as an out-patient at the North-Eastern Hospital for Children, February 4th, 1873. It was said that he had had a fall, but no symptoms were present which could be attributed to any injury. The child had a cough and seemed decidedly ill. Dr. Cayley was led, three days later, to suspect that the boy might have typhoid. There was diarrhœa in addition to cough and signs of bronchitis. No spots ever appeared. There was no history of any antecedent exanthem. Though the boy was ill, he was not specially cachectic. He improved somewhat till at the end of three weeks the gums over the lower jaw were noticed to be

ulcerated. A few days later the boy was admitted as an in-patient. The temperature was then normal. The gums rapidly ulcerated, and on March 4th it is noted that the lower jaw was quite bare over the front and internal surfaces as far back as the second molar teeth. The alveoli of the incisor teeth were quite exposed, the boy having removed the teeth himself and picked away some small pieces of bone. There was considerable swelling of the tissues over the jaw, and a very fetid discharge. The mouth was well washed out repeatedly with Condy's fluid. The ulceration did not spread beyond the gums to the cheek. The bone remained quite bare and rough, and of a dirty blackish-grey colour, and the sharp edges of the sockets of the teeth enabled the boy to eat crusts of bread very readily. His health remained good. He suffered very little pain except when attempts were made to try whether the bone was becoming loose. After some months (five or six) a hard ridge could be felt underneath, as if a case of new bone were forming. The lip gradually receded from the jaw, which seemed to project upwards into the mouth, and looked as if it were going to be cast off. The new bone underneath having become quite firm and distinct, and the necrosed jaw being loose apparently, it was determined (September 23rd) to remove it. The portion of jaw to come away seeming larger than could suitably be drawn through the mouth, it was divided on each side as far back as was convenient with bone forceps and the whole of the front of the jaw removed. The remaining portions were then easily twisted out with forceps. No portion of the periosteum, of course, was removed, and there was no occasion to use any force likely to interfere with the new bone which had been formed. The portion removed, which was exhibited to the Society, consisted of the whole of the lower jaw, with the exception of the condyle and coronoid process of the right side. No ill-results whatever followed the removal of the bone, but the child subsequently had an attack of scarlet fever, and was sent to the Fever Hospital October 12th, 1873. The new bone steadily increased in quantity and firmness, and at the present time no one would suspect from his appearance the amount of disease which had existed. There are, of course, no teeth in the lower jaw, but as regards mobility and the vigour with which the jaws can be closed no abnormality can be detected.

I am quite unable to assign any cause for the necrosis in this case. No exanthem had preceded, and the parents were not

Woodcut 9.



aware of any cause which could have led to the disease. The boy himself said that he was in the habit of sucking the heads of matches, but this cannot be relied on. I am not aware of any published case in which so large a portion of the lower jaw was successfully removed and so completely replaced by new bone. Mr. Bryant figures a specimen of one half a lower jaw removed from a child for necrosis, and mentions another case. In both new bone was produced, and the jaw was quite movable.

December 3rd, 1873.

May, 1874.—The new jaw is quite firm. The child closes the jaws vigorously, but the lateral movements are, possibly, somewhat defective.

6. *Peculiar deformity of the knee-joint.*

By Jas. E. Adams.

The patient from whom this specimen was taken was a small, feeble man, of 48 years of age, the subject of syphilis and addicted to the free use of alcohol. Two years ago he slipped down a few steps, and produced a transverse fracture of the patella, and he said that at the same time he felt something give way at the back of the knee, which gave him the idea of the "tearing of linen." He was treated at an hospital, and at the end of six weeks there was good fibrous union of the patella; but when he attempted to bear any weight on the limb the deformity represented in the drawing was produced, and he was wholly unable to take a single step. From this time up to a few months ago he remained without being able to get about except with crutches, when I saw him, and I came to the conclusion that by the aid of a proper mechanical support he might be able to walk. For the purpose of getting him an instrument I took him into the London Hospital, where he died in consequence of inflammation and suppuration of his lymphatic glands.

Woodcut 10.

I may just mention that there is no doubt that the instrument would have answered the purpose, as he got about for a few days with a gum-and-chalk bandage easily.

He had suffered for a long time from pains in all his joints, and it was evident in many of them that there were well-marked lips of cartilage thrown out.

On clearing away the popliteal space the vessels and nerves were

found in their normal relations to one another, and bending over the projecting upper end of the tibia without compression.

The capsule of the joint is everywhere dilated and thickened, and no distinction between the *external* lateral ligaments and it could be made out. The tendon of the popliteus passes beneath the part of the capsule corresponding to the long external muscle and blends with it, and passes to its normal insertion at the forepart of the groove of the outer condyle.

The heads of the gastrocnemius are separated from the capsule by bursæ, and beneath them the capsule is nearly one eighth of an inch thick.

The posterior ligament is also very thick and wide; the piece coming from the semimembranosus is of unusual thickness.

The section through the ligament and fractured patella presents no feature worthy of note as regards the fracture, but there is a considerable lip of cartilage developed on the side of the lower fragment.

The cartilages covering the articular ends are normal in structure and project into considerable lips.

To show the condition of the crucial ligaments a vertical section has been made between the condyles, revealing a very degenerate condition of the cancellous tissue, which was filled with fat. The crucial ligaments are normal in position, and attachment but loose, swollen, and watery in appearance.

From the condition of the other joints I think it may be fairly assumed that the joint was not a sound one at the time of the accident, but whether any ligaments have actually been torn and united, as the history seems to point to, or whether the deformity was brought about by a slow process of degeneration determined by the injury, I confess that I am unable to say.

December 16*th*, 1873.

7. *Specimen of enchondroma.*

By C. DE MORGAN, F.R.S.

THE patient was a married woman, æt. 28, who was admitted into the Middlesex Hospital in November, 1873. She was married in 1870, and a twelvemonth later—seven weeks after a confinement—she noticed swelling in the calf of the left leg. This subsided in a few weeks, but returned, accompanied by pain, in four months. After a time the swelling became stationary, and remained so till October, 1872, when she was confined a second time. From this time the swelling increased till March, 1873, when the limb was bandaged, and she thought that the swelling went down; but in August it rapidly increased. The tumour extended from the ankle to the popliteal space. Amputation was performed at the lower part of the thigh soon after her admission.

The tumour proved, as had been diagnosed, to be an enchondroma springing from the posterior and lower part of the left tibia. It contained many cysts filled with gluey and gelatinous matter, holding in it the cells and *débris* usually found in such cysts. The point of interest in the specimen is the existence in various places of cartilage nodules, some solid, some more or less softened in their centres, detached entirely from the main tumour. Some of these are at least an inch and a half distant from the tumour, and lie in the subcutaneous tissues, which, with the fascia, appear to be perfectly healthy. *December 16th*, 1873.

Note.—Up to this time (August, 1874) there has been no return of the disease.

8. *Stump of amputation at the hip-joint for recurrent spindle-celled sarcoma of the femur.*

By Henry T. Butlin.

The patient from whom these parts were removed was a woman, æt. 21, who was admitted into St. Bartholomew's Hospital, on the 8th July, 1873. She had then disease of the lower end of the right femur of some eight months' duration. For this amputation of the thigh in the middle third was performed by Mr. Savory, and she left the hospital apparently well in September. The disease was found to be a spindle-celled sarcoma, growing beneath the periosteum, roughening the bone, and chiefly affecting its posterior surface in the lower third. The periosteum had been broken through by the cancer, which infiltrated the surrounding muscular structures; a quantity of blood had been effused into the soft brown substance of the tumour, which formed a good example of the old fungus hæmatodes. The microscopic characters were those of the variety of *large* spindle-celled sarcoma, the cells of which generally formed interlacing trabeculæ; but there were also many cells of larger or smaller size, containing one, two, or even more nuclei. No fibrous stroma was present (Pl. X)..

The disease seemed to have been perfectly removed, and even a considerable margin of the sound structures around it. But in December the patient returned to the hospital with a recurrence of the growth in the stump. This had been noticed about the middle of November. The femoral glands were enlarged. The patient's general health appeared to be fairly good. On the 17th of December Mr. Savory performed amputation at the hip-joint. The stump shows infiltration of the muscles, chiefly of the outer portion of the thigh, very little disease of the bone or periosteum, and a large cavity about three inches in diameter filled with blood, situated just beneath the skin of the stump on the outer side of the bone. The microscopical characters are similar to those observed in the first tumour. The muscles are invaded for a considerable distance up the limb by a small round-celled growth. One interesting point is that the femoral glands, which were enlarged before the operation, have since in great part subsided.

The points which seem to be illustrated by this case are these. In the first place the tumour, both in its first appearance and in its recurrence, bore the characters of a soft or medullary cancer into which hæmorrhage had taken place. The first tumour especially answered to the old fungus hæmatodes; the second to what is often called a blood-cyst, both varieties of the same condition. Secondly, although the first amputation seemed to have entirely removed the disease, it is probable that the muscles were affected to a very much higher point than was thought at the time, just in the same way as was discovered in the stump after the second operation. If this be the case, in every removal these tumours must require an exceedingly wide margin to be allowed than beyond the parts which appear to the naked eye to be affected. Lastly, the glands which might have seemed to be secondarily affected by the disease subsided in great part after its removal, thereby rendering it probable that their enlargement was due to irritation.

January 6th, 1874.

Postscript.—The patient died on the 10th January, 1874, with symptoms indicative of secondary malignant disease of the viscera. No *post-mortem* examination could be obtained.

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9. *Abscess in the head of the tibia.*

By W. Morrant Baker.

The patient from whom the specimen was obtained was a man æt. 30, who was admitted into St. Bartholomew's Hospital with the history of having suffered from intermittent attacks of inflammation with suppuration about the upper part of the leg for fifteen years. Six months before admission an abscess formed in the popliteal space, and had continued to discharge ever since. On admission very marked enlargement of the head of the tibia was discovered, with great thickening and hardening of all the surrounding soft parts, which were riddled with sinuses. The leg was half flexed on the

femur, and could not be extended. The patient had suffered much in health from the local disease, and as he continued to lose flesh after his admission into the hospital, and the extent of the disease rendered any operation short of amputation apparently hopeless, the limb was removed at the knee-joint.

On section the head of the tibia was found occupied by a large, well-defined abscess of an hour-glass shape, lined by "pyogenic" membrane. Sinuses in the soft parts around the tibia communicated with the lower part of the abscess through holes in its bony walls. At the upper and back part of the specimen is a rounded opening leading through the wall of the abscess into its cavity, through which, doubtless, pus had made its way into the popliteal space, and caused the formation of the abscess which appeared six months before the patient's admission into the hospital. By this opening the pus had tracked only just outside the knee-joint. *January 6th*, 1874.

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10. *Ankylosis and ulceration of the knee-joint following long rest in the extended position, from a case of ununited fracture of the femur treated by steel pegs.*

By Henry T. Butlin.

A woman, æt. 50, was admitted into St. Bartholomew's Hospital under the care of Mr. Callender, on the 9th of March, 1873. She had sustained a very oblique simple fracture of the left femur, about the junction of the lower and middle thirds, from a fall whilst crossing a tramway. No history of lameness or disease of any kind previous to this accident; no sign of injury to the knee-joint. The fracture was treated with Liston's long splint and perineal band.

On April 21st the splint was taken off, but there was no union; it was reapplied, and a short splint was firmly bandaged over the front of the thigh. This treatment was continued until July 21st, when there was still no union.

On August 4th the limb was placed upon an inclined plane.

On the 5th September examination under chloroform was made, and it was then discovered that the knee-joint was fixed. Three

days later a weight (9 lb.) was applied for the first time. On the 18th the weight was further increased to 13 lb.

On the 13th December, as there was no appearance whatever of union, Mr. Callender resected the lower end of the upper fragment, removing a pointed portion of bone about an inch and a quarter long; it was found impossible to remove any part of the lower fragment. The two portions of bone were united and kept in apposition by two long steel pegs. In spite of every care the fragments could not be prevented from still moving upon one another; on the 31st January, 1874, amputation of the thigh was therefore performed by Mr. Callender.

At no time throughout the treatment had any complaint been made by the patient of pain or uneasiness about the knee-joint; nor had the attention been drawn to it by any abnormal appearance.

The ununited fracture and knee-joint are brought before the Society, but attention is chiefly called to the condition of the latter.

It is seen that in addition to firm fibrous ankylosis—by bands of tissue passing from the articular surfaces of the femur to those of the tibia, and again from the femur to the patella and joining surfaces which are apparently still cartilaginous—there is ulceration of the opposed articular surfaces at those parts at which when the limb is extended the joint-surfaces are usually in closest apposition. The ulceration resembles that due to disease rather than the mere thinning and gradual absorption of cartilage from pressure. The ulcers are for the most part of the variety termed "pitting;" they are surrounded by areas of considerable vascularity; the bone beneath is slightly, but by no means markedly, softened. The soft structures, synovial membrane, &c., are very little affected.

It is not the desire of the exhibitor to contend strongly that these are the results of long-continued rest in an extended position. The facts, however, must be allowed to speak for themselves. According to her own statement and the statement of her friends there had been nothing the matter with the knee or limb previous to the fracture; at no time during the treatment was pain complained of in the joint. Ankylosis was first observed six months after the injury and before the weight had been applied.

Dr. Carl Reyber has written an excellent paper upon the effects of long rest upon joints.* From numerous experiments upon

* "Ueber die Veränderungen der Gelenke bei dauernder Ruhe," von Dr. Carl Reyber (Dorpat). 'Deutsche Zeitschrift für Chirurgie,' B. iii, H. 3 u. 4, s. 190.

animals and from other observations he has found that, under certain circumstances, especially when the immobility is occasionally interrupted, ulceration and vascularity of cartilage will occur similar to what is observed in this joint. It may be that the fibrous ankylosis occurred in this joint as the result merely of rest and the slight amount of pressure which was exercised by the bandage; that the ulceration took place later as the result of diminishing the normal pressure between the joint surfaces by the application of the weight.

Attention is also called to the condition at the seat of fracture. The holes formed by the pegs and in which they lay until the amputation are all more or less enlarged, especially those in the lower fragment, thus illustrating what was stated some years ago by Dr. Brainard,* of Chicago, that long continuance of pegs *in situ* produces absorption of bone, and not new formation; but a considerable quantity of new bone has been formed around the points of entrance and of exit of these pegs—a sufficient contradiction of the last part of the above statement, that new formation of bone is prevented by the maintenance of such pegs. The defect in union was evidently due to the continual movement of the parts upon one another, and not to the lack of new bone.

February 3rd, 1874.

* "On a New Method of Treating Ununited Fractures," by David Brainard (of Chicago). 'Transactions of the American Medical Association,' 1854. (Prize Essay.)

VII. DISEASES, ETC., OF THE ORGANS OF SPECIAL SENSE.

Tuberculosis of the Choroid.

By Sidney Coupland, M.B.

Emily C—, æt. 8 years, a fair-haired, delicate-looking child, was brought to the Middlesex Hospital, and admitted under the care of Dr. Thompson, on January 1st, 1874. She was then in a state of semi-coma, from which she could be roused with difficulty; she was constantly moaning as if in pain, but could not be made to answer any questions.

The following account was given by her mother. Her grandfather had died of consumption, and her father suffered from cough. The child had always been weakly. When three years old she had scarlet fever, followed by measles and bronchitis. She had then suffered from suppurating glands in the neck; and shortly afterwards from obstinate diarrhœa, which lasted for two months. From that date she had remained fairly well up to one month before her admission, when she began to be drowsy and languid, and at times restless; she suffered also from pains at the top of her head, frequently starting up at night with a cry, and putting her hands to her head. She was then taken to the Hospital for Sick Children, Great Ormond Street, where she attended a few times as an out-patient. Frequent vomiting was added to the other symptoms during the last fortnight of her illness. On December 27th she took to her bed, and from that date she lapsed into a state of more or less complete unconsciousness, taking very little food, groaning at intervals, and occasionally being very restless, complaining of the pain in her head.

On admission, in addition to the condition above noted, there was flushing of the face, rapid breathing (32), pulse 116, temp. 99·6°. There was no cough, but sonoro-sibilant râles were heard throughout the chest, and percussion revealed singularly clear and musical resonance over the upper halves of the lungs. There was constipation

but no vomiting. It was thus tolerably evident that the child was suffering from tubercular meningitis. She continued in the same state, dying comatose on the morning of the 4th. On two occasions her eyes were examined ophthalmoscopically by Mr. Henry Humphreys—on the evening of the 2nd and on the 3rd, the latter occasion being about twelve hours before her death. Mr. Humphreys has kindly furnished me with the following account of the result of his examination :—

"Refraction emmetropic; retina irritable; child comatose; examination by 3 in. inverting lens; optic disk well defined, fairly normal. A little to the outer side of the yellow spot is a small group of well-defined yellow flecks. Similar flecks are seen thickly scattered amongst the vessels to the inner side of the disk, not however in the immediate neighbourhood of the disk, but removed from it some 15°. The flecks are of various sizes, the average being that of a millet seed. In shape they are for the most part round. Their circumference is well defined, and portions of it, in some of them, pigmented. The central part of the fleck is very bright, the peripheral dusky. The diameter of the bright central portion measured about half that of the fleck. No definite relationship could be made out between these spots and the retinal or choroidal vessels."

The brain was removed two and a half hours after death, and the posterior three fourths of each eyeball removed from the back of the orbit, and at once placed in Müller's fluid. The surface of the hemispheres was dry and sticky; and there was adhesion between the two halves of the cerebrum in the longitudinal fissure, and between the frontal and temporo-sphenoidal lobes at each fissure of Sylvius. Minute granulations studded the smaller vessels in both these situations as well as at the base of the brain, but there was no lymph at the base. The lateral ventricles were considerably distended with fluid and their walls softened. The lungs were most thickly stuffed with grey granulations throughout; in many places the point of the knife could not be placed between them; the granulations varied in size from a mustard to a millet seed, many with pigmented margins; none soft or opaque. Grey miliary granulations were also found on the pleura, diaphragmatic peritoneum, on the surface, and within the substance of the liver, spleen, kidneys, and supra-renal capsules; but the mesentery and intestinal peritoneum were free. There was enlargement of the solitary follicles in the intestines.

DESCRIPTION OF PLATE IX.

This plate illustrates Mr. Coupland's case of Tuberculosis of the Choroid. (Page 215.) From drawings by himself and Mr. A. G. Nicholls.

FIG. 1. Represents the eyeball, its coats being everted. The retina is reflected and in great part removed, displaying the inner surface of the choroidal membrane studded with tubercles. × 2.

The tubercles in the figure are somewhat too prominent and too deeply pigmented.

2 and 3. Vertical sections through the membrane. Fig. 2 × 50, and fig. 3 × 250. (Reduced one half.)

a. Vitreous membrane, the layer of retinal pigment-epithelium being absent.

b. Chorio-capillaris.

c. Artery (divided longitudinally), around which the tubercle is mainly developed.

d. Veins, cut obliquely.

e. Vessel (artery ?) containing a mass of disintegrated blood-clot.

f. Strata of branched pigment-cells ("lamina fusca").

g. Large, pale, spheroidal or oval nucleated cells, of average diameter of $\frac{1}{1800}$th of an inch.

h. Tubercle, composed mainly of small round nucleated cells of about $\frac{1}{4500}$th of an inch in diameter.

Fig. 1.

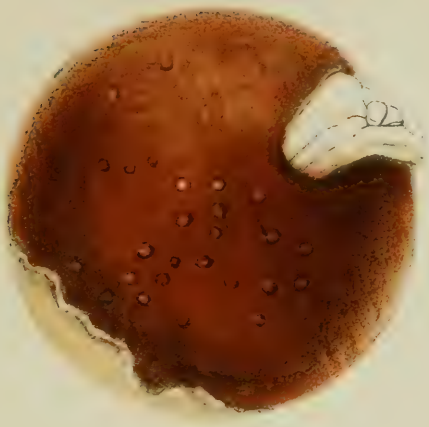


Fig. 2.

Fig. 3.

On the following day the eyes were taken from the preservative fluid, and examined. *Right.*—The vitreous humour having been removed, the coats of the eyeball were carefully turned inside out. A group of yellow-coloured spots seated to the outer side of the optic nerve entrance was then seen through the retina; while a few others more widely scattered existed to the inner side of the papilla. Removal of the retina, which was perfectly continuous over the spots, and did not appear at all altered when examined by a lens, brought the bodies into view. They then appeared as spheroidal, translucent, slightly greenish granulations, measuring from $\frac{1}{40}$th to $\frac{1}{20}$th of an inch in diameter, with margins slightly elevated above the surface of the surrounding brown pigment, from which they were sharply defined. The larger nodules were white and opaque in their central portions, but a few were perfectly translucent throughout. They were most numerous to the outer side of the optic eminence, where a group of eight existed; but a few more or less isolated occurred in other parts of the membrane, all, however, being included within the limits of the posterior half of the globe. Examined with a lens, they appeared to be seated at a more superficial plane than the main vessels of the choroid, but the chorio-capillaris could be traced as a fine network extending for a short distance over the surface of each nodule; in no instance could capillaries be seen over the central parts. The *left* eye presented precisely similar appearances, the tubercles being here rather more numerous (vide Pl. IX, fig. 1).

Vertical sections of the right choroid were made after hardening in Müller's fluid, and embedding in gum and wax mass. Some of the sections were stained with carmine, and were examined in glycerine or in Dammar varnish. Before describing the morbid changes here found it will, perhaps, not be deemed out of place to enumerate the leading features in the structure of the choroid membrane, as in that way it may be possible to arrive at some definite conclusion as to the starting-point of these tubercles. Thus, taking its structures from its retinal surface outwards, there is first the layer of so-called choroidal (properly retinal) pigmented epithelium, resting on a basal structureless membrane, which covers the whole surface and gives attachment to all the connective basis of the choroidal stroma. Immediately underlying this vitreous membrane is the network of capillaries (*chorio-capillaris*). The rest of the membrane is occupied mainly by the larger choroidal vessels, sup-

ported by the connective stroma; the arteries mostly lie nearer the retinal surface than the veins, a rule by no means invariable, as many of the specimens exhibited show. The lymphatics of the choroid are described as arising in the sinus which invests the outer surface of the membrane, and as accompanying, or rather containing within them, the vessels.* Other methods of preparation than those adopted in the present case are doubtless necessary to demonstrate this lymphatic structure, for in none of the preparations I have made have I been able to differentiate it. The stroma is composed in part of fibrous tissue, and largely of connective-tissue corpuscles, provided with long branching processes, which join one another and the connective framework; a variable number of these cells contain pigment-granules, the remainder being colourless; these pigmented cells occupy the superficial layers of the membrane. Lastly, there is a variable number of large spheroidal or oval nucleated cells, averaging a white blood-corpuscle in size; these are said to be more numerous in the child than in the adult.†

Returning now to the present case, I may note that in none of the sections was the retinal pigment-epithelium preserved, it being all detached in the preparation. The *tubercles* were seated below the level of the vitreous membrane, which was, in most instances, slightly raised by the subjacent growth (vide Pl. IX, fig. 2) coming close to the surface at one point. The chorio-capillaris could be traced in the sections to intervene between the outer portions of the tubercle and the vitreous membrane. Each tubercle was composed mainly of small round nucleated cells, averaging $\frac{1}{4500}$ of an inch in diameter, closely packed together and concealing for some distance the vessel or vessels which it invested. It also contained larger nucleated cells, round, oval, or branched, of the average diameter of $\frac{1}{1800}$th of an inch; these elements being by no means numerous, and best examined on breaking up a tubercle with needles.

The relation of the growth to vessels was shown best in those sections where an artery had been cut transversely; here there was seen a massing of the tubercle-cells around the vessel, but separated

* Lymph-channels with definite epithelial lining have been recently described as surrounding the capillaries, and as being in direct communication with the branched connective-tissue corpuscles of the choroidal stroma.—(Morano, 'Central-blatt fur die Med. Wissenschaft,' No. 1, 1874.)

† Stricker's 'Histology,' art. "Tunica vasculosa," by Prof. A. Iwanoff. Syd. Soc. Transl., vol. iii, p. 309.

from its outer wall by a distinct clear space, these probably being appearances due to the early stage of the growth. The largest tubercles were amorphous and caseous in the centre, or obscurely fibrous; but in none was there to be seen any lymphoid tissue.

The amount of pigment in the membrane was very small, and the large pale spheroidal cells were abundant, but not more numerous in the immediate neighbourhood of the tubercles than elsewhere (fig. 3 *g*). Many of the vessels, both arteries and veins, were plugged with disintegrating blood-clot, from which the colouring matter had been discharged; it being only in the capillaries that the contour of the red corpuscles could be defined.

From these characters, and particularly its undoubted perivascular distribution, the resemblance of tubercle of the choroid to tubercle of the pia mater is most striking, so that, with the knowledge we possess of the distribution of the lymphatics in this membrane, we must conclude that the growth arises here, as it does in the pia mater, by a proliferation of the elements composing the lymphatic sheaths. The structures hitherto affirmed by writers on the subject to be the starting-points of these growths have been the adventitia of the smaller arteries, or the pale stromal cells, or the free lymphatic cellular elements. Thus *Manz*, who was the first to record the morbid appearances of tubercle of the choroid in a case of general tuberculosis,* enters fully into the histology of the growth in a second article (in which two cases are recorded) published five years after the first.† He believes that the tubercles arise by a proliferation of the nuclei in the adventitia of the vessels forming the middle layers of the membrane, and in a minor degree from the colourless stromal cells. *Busch*‡ and *Cohnheim*§ (1867) have also fully described the anatomy of choroidal tubercle, the latter in a series of seven consecutive cases of general tuberculosis, mostly in adults. Busch refers the origin of these growths to the proliferation of the pale branched stromal cells, and, contrary to Manz, he avers that their growth is primarily more in connection with the superficial capillary layer than with the larger vessels; while Cohnheim differs from both in making them arise from the pale round lymph (?) cells to which I have alluded (vide Pl. IX, fig. 3 *g*),

* Von Graefe's 'Archiv für Ophthalmologie,' Bd. iv, 2, p. 120 (1858).

† Op. cit., Bd. ix, 3, p. 133.

‡ Virchow's 'Archiv,' Bd. xxxvi, p. 448.

§ Ibid., Bd. xxxix, p. 49.

comparing these cells to the "Wanderzellen" of Recklinghausen. A complete history of the subject, with a full summary of these views, is given in a paper by *A. Von Graefe* and *Th. Leber*,* where occurs (for the first time) an account of the ophthalmoscopic appearances of tubercle in the choroid in two cases (one recorded by *Fränkel*). In this paper it is stated that Cohnheim, continuing his observations, had met with eleven more cases, thus making *eighteen* consecutive cases of general tuberculosis, in which tubercles had been found (*post-mortem*) in one or both eyes. In many of these cases the meninges were not affected. Such a series of cases was surely sufficient to enable Cohnheim to affirm that the choroidal membrane was a structure as frequently affected in general tuberculosis as any other organ. In 1869 *Mr. Soelberg Wells*† exhibited at this Society a specimen of tubercles in the choroid diagnosed during life; and since that date the ophthalmoscopic appearances have been described by other writers, as *Jaeger*,‡ *Bouchut*,§ *Fränkel*,‖ &c. The last-named observer describes the growth and increase in the tubercles under observation.

This affection of the choroid coat of the eye may, I think, be quoted as an interesting example of the direct gain derived by clinical research from *post-mortem* observation; for although the sanguine expectations of Cohnheim have by no means been verified, yet there is no doubt that in many cases the existence of the affection has been of great value in confirming a diagnosis, as in the present case. Indeed, from the advanced stage of degeneration in which some of the tubercles were found, the ophthalmoscope would, doubtless, have detected the presence of the disease before any of its general manifestations had been exhibited.

February 17*th*, 1874.

P.S. July 28th, 1874.—A second case has recently come under my observation at the Middlesex Hospital. It occurred in a child nine years of age, who was admitted into the surgical ward for chronic disease of the ungual phalanx of the toe. One week after admis-

* 'Archiv für Ophthalmol.,' Bd. xiv, 1, p. 183.

† 'Path. Trans.,' vol. xix, p. 550.

‡ 'Ophthalmoskopischer Hand. Atlas,' Wien, 1869, p. 214, taf. xxviii, fig. 121.

§ 'Gazette des Hôpitaux,' 1871, p. 97.

‖ 'Berlin. Klin. Wochenschrift,' 1872, p. 4.

sion slight head symptoms occurring, with vomiting, the ophthalmoscope was had recourse to, and at once detected numerous tubercles in each eye. She died one week after the onset of the symptoms; on *post-mortem* many of the tubercles were found to be caseous throughout. Evidently here some of them must have been present long before the onset of symptoms.

The specimen in the first case is preserved in the Middlesex Hospital Museum.

VIII. TUMOURS.

1. *Large parotid tumour.*

By W. W. Wagstaffe.

The tumour was removed from a man, æt. 50, and had been in existence more than fifteen years. It first appeared as a nodule in the situation of the socia parotidis of the left side; it was never painful, and it had increased with great rapidity during the last six or eight months.

It was now the size of two fists, projecting as far forwards as the angle of the mouth, but chiefly backwards below the ear to behind the angle of the jaw. In both these directions it was movable, but along the zygoma it was firmly adherent. It was nodular and evidently cystic, and the skin was closely adherent over a large portion of the tumour. The submaxillary glands on this side were slightly enlarged, but there was no involvement of the mucous membrane of the mouth, and the parotid duct was not obstructed. The temporal artery was felt pulsating above, and there was no facial paralysis.

One of the cysts had burst in January, and some clear oily fluid escaped. The wound had healed.

The patient came under my care July 17th of this year, and the tumour was removed July 23rd by two nearly horizontal incisions, and the flaps dissected upwards and downwards. It was very adherent to the fibrous tissues towards the zygoma, and a large branch of nerve was here embedded in the growth and was divided. The parotid duct was avoided, and there was only occasion to twist two or three small vessels. A counter-opening was made in the lower flap for drainage.

Five days after operation he was up, and in eighteen days he was discharged, with the wound healed. The orbicularis was paralysed.

The tumour weighed sixteen ounces, and the measurements of the section made through the middle of the growth were four inches by three and a half inches. The outline was irregular and nodu-

DESCRIPTION OF PLATE X.

Figs. 1 and 2 illustrate Mr. Butlin's case of Recurrent Sarcoma of the Femur. (Page 210.) From drawings by himself.

FIG. 1. Shows a section taken from the original tumour.

2. Shows a transverse section of muscle infiltrated with the new growth from the recurrent tumour.

Figs. 3 and 4 illustrate Mr. Wagstaffe's specimen of Large Parotid Tumour. (Page 222.) From drawings by himself.

FIG. 3. Is a section showing irregular arrangement of glandular structure in a fibrous matrix.

4. Shows a section through the wall of a cyst or acinus.

Fig. 2.

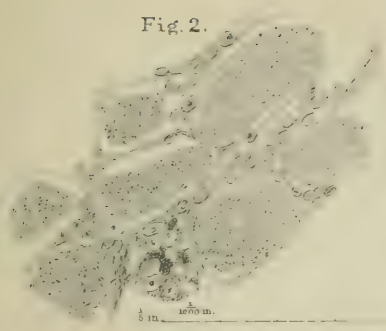


Fig. 1.

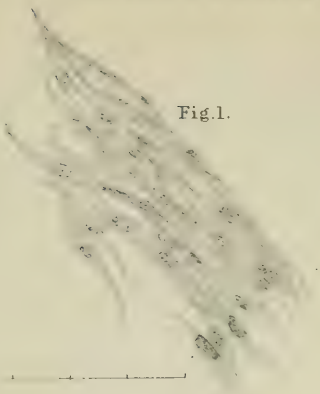
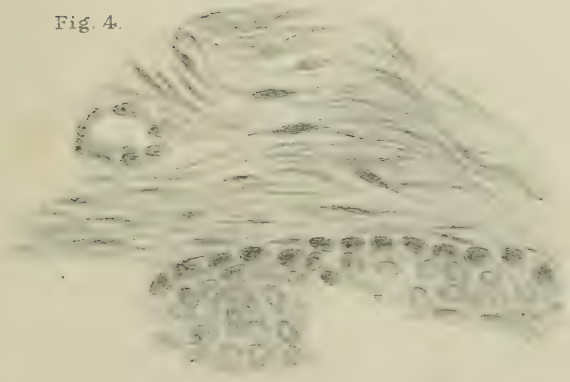


Fig. 3.

× 37

Fig. 4.



× 300.

lated, owing to the projection of cysts of varlous size, thickness, and character. These were in some places as large as a walnut, but generally small, making the section appear to be honeycombed near the surface of the growth. In the centre one of the cysts had a number of radiating loculi, which gave a rather curious appearance to the section. The contents of the cysts were generally thick and viscid; in the small firmer and more like thickened lining membrane, in the large thinner and more oleaginous. The framework was composed of fibrous tissue, which branched off between the different cysts: in some places this was very firm, but nowhere so homogeneous or elastic and hard as cartilage; in others it was gritty and evidently calcareous, and this was the case particularly towards the back of the tumour beyond the angle of the jaw.

Microscopically examined the tumour was composed of a framework of well-developed connective tissue, which in some places was exceedingly dense. Thickly studding this framework was a racemose arrangement of glandular structure, in some places irregular, in others regular and symmetrical. The centre of the larger cysts or acini showed evidences of degeneration in the presence of a considerable quantity of granular matter, and in some places the cells appeared to have undergone calcification. The calcification was in the form of spherical masses in which the outlines of the original nuclei were often apparent. No true bony formation was evident.

The accompanying sketches (Pl. X) represent the appearances of a section seen with one and a half inch and with one fifth inch respectively. *October* 21*st*, 1873.

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2. *Scirrhus of the breast in the male subject.*

By John Wood.

The specimen consisted of the left breast of a gentleman, æt. 60 years, which had been removed by Mr. Wood a few days previously. The tumour was very hard, presenting two or three rounded, smooth,

and elevated nodules, which were of a purplish-red colour and glistening appearance; a network of vessels could be observed close beneath the epidermis and completely surrounding the nipple, which was retracted. From the nipple at various times a considerable amount of dark red blood, or of glairy serum deeply tinged with blood, had escaped. The tumour was freely movable upon the pectoral muscle, and was somewhat tender to the touch, and had latterly begun to give pain and uneasiness. There were no enlarged glands in the axilla, but a somewhat brawny feel extended in the skin a little beyond the border of the tumour. The patient was somewhat stout, florid in appearance, and with much subcutaneous fat about the chest and breast. His heart and lung sounds were normal.

The tumour was removed by two elliptical incisions, including a considerable margin of the skin and fat around the gland. The fascia covering the pectoral muscle was not adherent, and was left uninjured in the operation. Very little blood was lost. The wound healed in great measure by primary adhesion, and since the operation up to the present time (September, 1874) no evidence of any return of the disease, either in the cicatrix or its neighbourhood or in the axillary glands, has become apparent.

On section the tumour presented all the naked-eye appearances and characteristics of a scirrhus, highly congested and gorged with blood. It was hard and gristly, and included the whole substance of the gland. In the centre, however, was a considerable cavity containing fluid and semi-coagulated blood or bloody serum, which seemed to be of the same character as that of the fluid discharged at various times through the nipple. The microscopic appearances are given in the report of the Morbid Growths Committee.

November 18*th*, 1873.

Report by the Committee on Morbid Growths on Mr. Wood's case of scirrhus of the male breast.—The small fragment of the tumour which was submitted to us for examination having been hardened in chromic acid, sections were obtained which presented the following appearances.

The bulk of the tumour is composed of a dense fibrous stroma, arranged so as to form alveoli, which in the most typical parts of the tumour are filled with large, irregular shaped cells, each containing a single, large, clear, oval nucleus. The tumour is therefore a

DESCRIPTION OF PLATE XI.

Plate XI illustrates the Report of the Committee on Morbid Growths on Mr. John Wood's specimen of Cancer of the Male Breast. (Page 224.) From drawings by Mr. Marcus Beck.

FIG. 1. Shows an alveolus with a vascular villous process projecting into it. × 30. The contents have been in great part washed away.

a, a, a. Blood-clot mixed with a few cancer cells.
b. Vascular villous process.
c. An empty alveolus.
d. An alveolus partly filled with cells.

2. Part of an alveolus, × 70, with a vascular villous process.

a. A blood-clot mixed with a few cancer cells.
b. Wall of alveolus.
c. Vascular villous process.
d. Cancer cells of alveolus.
e. A vascular process cut transversely.

3. Tip of a vascular villous process. × 225.

4. A group of cells from an alveolus. × 225.

Fig 2

Fig. 3.

Fig. 1.

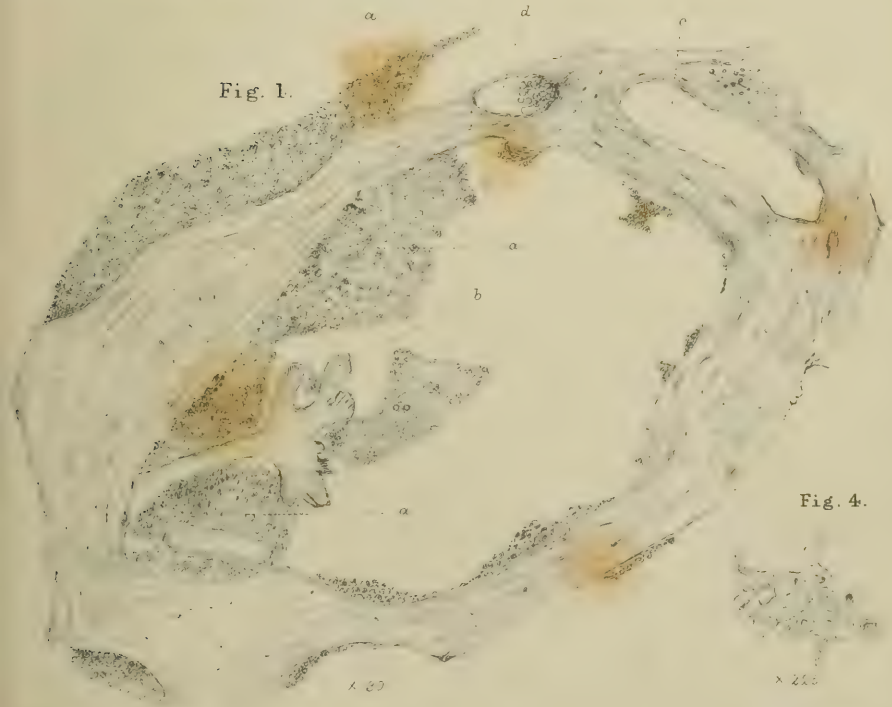

Fig. 4.

specimen of scirrhous cancer (Pl. XI). It presents, however, many interesting variations from ordinary scirrhus which we believe to be somewhat rare. The bands of stroma separating the alveoli, and the alveoli themselves, are extremely variable in shape and size. The alveoli vary in diameter from $\frac{1}{10}$ to $\frac{1}{100}$ in., and the bands of stroma between them from $\frac{1}{20}$ to $\frac{1}{200}$ in. in thickness. The majority of the alveoli are circular or oval in form, but some of the larger ones are excessively irregular. The large size and irregular shape of some of the alveoli seem to depend upon the fact that copious hæmorrhage has occurred into most of them, converting them into small blood-cysts, in many parts readily visible to the naked eye. Scattered here and there through the clots filling these dilated alveoli are to be found the original cells which filled the space. With a low power the stroma seems to be composed simply of dense fibrous tissue, in many parts darkly pigmented. Under a higher power the pigmentation is found to be due in great part to groups of crystals of hæmatoidin These crystals are about the size of a blood-corpuscle and irregularly prismatic in form. Their angles are somewhat rounded, so that it is difficult to see their exact form. They are of a dark red colour. They are most abundant in the densest parts of the stroma, and are in many parts arranged in lines, suggesting the idea that they may be due to changes occurring in clots in obliterated vessels. At the circumference of the alveoli the stroma becomes more transparent, and almost homogeneous in its structure in many parts. Scattered through it in these parts are a few small spindle-shaped and stellate cells. At the margins of the alveoli in the greater part of every section the stroma is found to be tunnelled in all directions by large thin-walled vessels. In a very large proportion of the alveoli these vessels form projections into the spaces. In some the vessels merely form rounded prominences in the wall of the alveolus. In others they project into the alveolus in a bud-like process, containing a number of convoluted vessels, the whole having somewhat the appearance of a Malpighian body of the kidney. In others, again, the vascular processes more closely resemble fragments of a villous growth of the bladder, consisting of a number of branches upon a stem connected with the wall of the alveolus. Under a high power these processes seem to be composed of an almost homogeneous substance, staining readily with logwood or carmine, and containing scattered through it a few rounded nuclei about the size of blood-corpuscles. This substance binds together a little knot of dilated

capillaries. In Pl. XI, fig. 2, a dilated alveolus $\frac{1}{10}$ in. in diameter is shown with a branched villous process $\frac{1}{25}$ in. long projecting into it. The alveolus was originally filled with blood-clot, and before the section was cut formed a dark red spot in the specimen as big as a pin's head. In some of the most vascular parts the stroma is filled with rounded nuclei, apparently indicating rapid growth. The most vascular part of the tumour is, as usual, near the growing margin.

These vascular processes are described by almost all authors as not infrequently occurring in soft cancer. Cornil and Ranvier describe them as occurring in a variety of cancer they call erectile or hæmatoid cancer. Rindfleisch says they occur in soft cancer only. The rarity of this case therefore depends upon the presence of such villous growths or vascular buds projecting into the alveoli of a cancer which both from its naked eye and microscopical characters must be classed under the head of scirrhus. We have not been able to find the records of any exactly similar case.

Marcus Beck.
Henry Arnott.

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3. *Small loose ossifying enchondromata in the neighbourhood of a pedunculated exostosis of the tibia.*

By Rickman J. Godlee.

The largest of the three specimens is an ordinary pedunculated exostosis developed near the junction of the upper epiphysis with the shaft of the tibia in a boy eleven years old. It was noticed two years ago, and was slowly increasing. It presents nothing out of the common, but shows well a superficial layer of cartilage, an internal mass of spongy bone, the cancelli of which radiate from the centre of the pedicle, and an intermediate layer of dense cretaceous deposit, preliminary to ossification.

The interest rests in the close proximity to it of the two smaller growths, one the size of a pea, the other three or four times as large; the latter was distinctly felt before the operation, but after the exostosis had been removed by the cutting pliers neither it nor the

smallest could be taken from the wound until a somewhat dense membrane covering them had been divided, when they shot out readily. It is possible that they may have been connected with the sheath of the tendon of the semimembranosus.

A section through the smallest shows a distinct fibrous capsule encasing a mass of hyaline cartilage. At one point the capsule dips slightly inwards, and from this point a centre of ossification extends into the interior of the growth. Radiating from this centre the cartilage-cells are arranged in bundles between which pass fibres, and in them the bone is afterwards deposited. No other tumours existed on any other part of the body.

I am not aware that this is a common complication of the pedunculated exostosis, nor does it appear easy to account for their development. *December* 16*th*, 1873.

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4. *Pendulous tumour from the pubes.*

By T. W. Nunn.

The tumour was of an ovoid form, $4\frac{1}{2}$ inches in length, $7\frac{1}{4}$ inches in circumference at its centre, and $4\frac{1}{2}$ inches at its pedicle. The

Woodcut 11.

patient, a middle-aged man, a coachman, stated there had existed on the pubes for some years a soft lump the size of a small cherry; this he had punctured with a hairpin, and had squeezed it with the view of evacuating its contents; nothing but a little blood followed. The tumour, about nine months previously to his being first seen by Mr. Nunn, had received a severe bruise from the kick of a horse, and immediately began to enlarge. The surface was smooth, bulging at one point, of a livid colour, was marked by some large veins, was doughy to the touch, was not painful except when roughly handled.

It was removed by incision through the skin, and by the use of the écraseur to the tissues of the pedicle. The wound healed without trouble.

The section of the tumour showed that it was formed by hæmorrhage into the loose connective tissue of the part.

January 6th, 1874.

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5. *Dermoid cyst of the scalp simulating meningocele.*

By Henry Arnott.

On the 4th of December, 1872, a little child, Susan M—, æt. 8 months, was brought to me amongst my out-patients at St. Thomas's Hospital on account of a tumour on the head. On its mother removing its hood a rounded sessile swelling the size of a large walnut was seen just in front of the anterior fontanelle. The thin skin stretched over the swelling permitted the light to shine through it distinctly; there was no pulsation nor was it reducible, but it clearly contained thin fluid, and careful manipulation discovered a distinct opening in the skull nearly as large as the base of the tumour, and continuous behind with the somewhat widely open fontanelle. The baby was not very well nourished, but was usually good and quiet.

The history given by the mother was that the head was quite natural when the child was born, but that some five weeks later she had noticed a soft swelling as big as a hazel-nut over the anterior fontanelle,

rising and falling with regular pulsation, and swelling when the child coughed. She took the little one to Guy's and St. Bartholomew's Hospitals, and at the latter place pressure was tried, but the child cried so much that the mother would not continue it.

As other surgeons had also been consulted, I need hardly say that iodine paint had been recommended, and an incision had been promised, "when the child should be stronger."

Regarding the tumour as probably congenital—for the fact of its having been overlooked for the first five weeks resembled what one often finds in connection with congenital malformations, and which I usually explain by the mother seldom being strong enough to wash the baby carefully herself sooner—and paying special attention to the statement as to its previous pulsation and swelling with cough, I had no hesitation in pronouncing the case to be a meningocele, and during many months I was in the habit of pointing out to the students the several signs which made the diagnosis so simple. I had a small gutta-percha case accurately modelled to the part, perforated in several spots, lined with lint, and bound over the swelling with elastic bandages.

Under this treatment, which seemed to give no inconvenience, the swelling gradually subsided until towards the close of the following year it was less than half its former size, less translucent, and the opening in the skull was not nearly so clearly to be made out. I hoped that we had a case exemplifying the good effects of support and slight pressure in meningocele, and, when a week or two later, the baby was brought in a dying state with broncho-pneumonia, I anxiously advised its admission, trusting to see the condition of the tumour if the child should die.

But I was not a little taken aback a few days afterwards by one of the dressers telling me that the baby was dead, and that the "meningocele" turned out to be really only a sebaceous cyst. The condition present will be seen on examination of the specimen now exhibited. The skin of the scalp and the muscular layer beneath peeled easily off the tumour, leaving behind a thin-walled cyst, now opaque, and lodged in the bone just in front of the anterior fontanelle. The cyst is quite unconnected with the interior of the skull, but on holding the specimen up to the light it is seen that the central portion of its base is still only membranous, and readily allows light to shine through.

Careful examination of thin sections by Mr. C. Stewart showed

that inside the outer investment of connective tissue was a thin layer of true skin with delicate epithelium of squamous type, fine hairs, and rudimentary glands. The contained fluid, now coagulated, consisted of oily matter mingled with shed epithelium. There was no doubt, therefore, of the true nature of the case. The baby had died with broncho-pneumonia.

The one special point of interest beyond the fact of the rarity of these tumours in this position is the very great difficulty in the diagnosis of such a cyst from a meningocele. If another precisely similar case were to come before me to-morrow I should still be unable to give a decided opinion as to its nature. The translucency, the communicated pulsation from the underlying fontanelle, and the deficient ossification of the skull forming its base, would all cause an uncertainty which would not be sufficiently cleared up by the impossibility of reducing the swelling. The lesson taught is clearly one of caution in interference with such tumours; the mistake made in this case mattered little, but fatal errors have been committed by surgeons mistaking meningocele for simple dermoid cysts, and undertaking their removal.

In the 'Maladies Chirurgicales des Enfants' of M. Giraldès, p. 342, there is recorded a case almost precisely resembling this one, a very interesting additional sign of meningocele being that when the fluid was withdrawn by a fine trocar, and compared with some fluid obtained from a spina bifida tapped the same day, no difference, physical or chemical, could be detected between them. Finally, other means failing, M. Giraldès tried to cure the supposed meningocele by removing the projecting portion and procuring obliteration of the communicating pedicle by ligature and caustic, and it was only then discovered that the tumour was a delicate dermoid cyst, like that described in the present communication.

January 20th, 1874.

6. *A large axillary cyst.*

By John Gay.

The cyst exhibited was removed from a man, æt. 35, a patient of Dr. Simpson, of City Road. It was at the time of removal somewhat of the shape and size of an ordinary child's head (it has shrunk since), and was so situated that the patient could not depress his arm below that of about a right angle with his side. It had been two or three years in growing, and had at no time given him any inconvenience beyond that which arose from the impaired use of his arm. It was slightly movable in relation to its contiguous textures; but to the fascia of the axilla, with which it was in contact, it was somewhat more firmly adherent. I removed it. Some slight bleeding took place from axillary vessels, which were secured, and the man made a good recovery.

The cyst wall is tough, and, generally, about a line in thickness. It consists of wavy connective or fibrous tissue, intermixed throughout with small round granular cells, having the size and appearance of leucocytes. In the outer laminæ there are very few of these cells, but they increase, in proportion to the matrix-tissue, towards the inner wall or surface of the cyst, where they are very abundant and easily separable from the comparatively scanty fibrous elements in which they are entangled. The contents of the cyst were a highly albuminised, slightly turbid, and straw coloured fluid, with cholesterin, small granules, and shrivelled pus-like cells. Dr. Goodhart assisted me in making the microscopic examination. It is clearly an inflammatory product. *February 17th*, 1874.

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7. *Tumour from the left side of the neck.*

By T. W. Nunn.

Mr. S—, æt. 73, a patient of Mr. Hornsey Casson, of Ashbury, was first seen by Mr. Nunn, October, 1873. The tumour had

existed during twenty years, but of late had considerably increased in size, and had become the seat of pain which extended through it down the arm; thus, sleep was prevented and the patient's health and strength were beginning to fail. The tumour was about the size and shape of half a large orange, just overlapped in front and behind, respectively, by the sterno-mastoid and the trapezius muscles; it was highly elastic, giving a false sensation of fluctuation, and it appeared to be attached to the transverse processes of those cervical vertebræ which correspond to the brachial plexus. Manipulation of the tumour caused much pain; the skin over was not quite free from redness. The patient had suffered from a paralytic attack not long before the date of his first noticing the swelling in the neck, the mouth having been drawn to the left side, and a sequence of the attack was a persistence of paralytic tremors affecting the left arm. Ten years ago there had been an "ulcer" on the side of the nose, but this, after remaining two years open, healed. The patient had a sickly and anxious appearance. On January 17th, 1874, Mr. Casson wrote, saying that Mr. S— had died the day previous. "The tumour increased rapidly in size during the last two months.

"*Post-mortem examination, eight hours after death.*—Body much emaciated. On the left side of the neck is a prominence the size of a large orange; the skin is not adherent at any part; the platysma much hypertrophied; the deep fascia thickened, firmly binding down and covering the tumour. The tumour was attached by a large pedicle to the anterior tubercles of the fifth and sixth cervical vertebræ, the superior cord of the brachial plexus passing through the midst of the tumour; beneath the pedicle was an irregular cavity the size of a hazel-nut, filled with débris and small black clots. The vertebræ were not diseased. The main vessels of the neck were anterior to the tumour, but were slightly pressed upon by its lower and anterior border. None of the cervical or other glands seemed affected."

Mr. Nunn wished to refer to an account of a specimen of so-called neuroma exhibited for him by Mr. Sibley, published in vol. viii, p. 22, of the Society's 'Transactions.' In the instance quoted the tumour was excised by the late Mr. Barber, of Stamford, and was found to involve the same portion of the brachial plexus as that which the specimen before the Society on this occasion did. Mr. Nunn considered that the tumour was a sarcoma of the fibrous

structures surrounding the exit of the nerves from the vertebral column, and appeared to him to consist of closely packed small spindle-celled elements. *May 5th*, 1874.

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8. *Adenoid or spindle-shaped sarcoma.*

By John Gay.

The tumour exhibited was taken from the right mammary region of an unmarried woman, æt. 32, from which four apparently like growths had been taken during the prior fourteen years. Of these (of which accounts have been given in vols. xvi and xx of the Society's 'Transactions') the first made its appearance at the age of nineteen at the outer margin of the gland, and, as it was distinct from the gland itself, was removed alone. Eighteen months afterwards several other tumours formed in the same site, taking a lineal direction also along the margin of the gland, were removed. In 1866 the growths recurred. These were again in close proximity to the gland, and were removed together with it. The specimens were examined by the late Dr. Hodgkin and myself, and found to be prolifero-cystic growths which had developed exclusively within the fibrous envelope of the gland. In that portion of this texture in which these growths existed, and which was prolonged towards the axilla, cysts were found of various sizes (some microscopically minute) and at different stages of development, the larger ones having secondary cysts either within their walls or depending from them, whilst others approached in appearance the character of the tumours exhibited. They contained areolar stroma, round and spindle-shaped cells, nuclei, and granules. In the tumour shown, as in others, the whole tissue is compact, homogeneous looking, and slightly elastic. The adjacent fibrous tissue was removed in the direction of the axilla as far as it was practicable to do so.

Dr. Goodhart gave me his valuable aid in the examination of this tumour. It is lobulated, firm, and elastic, encapsuled, and presents, on being cut through, a foliated aspect. There is, beyond the

capsule, a margin of greyish coloured new growth, without any definite capsule. Altogether there are the usual microscopic appearances of a spindle-shaped sarcoma.

These several recurrent growths show, I think, that, at all events, a *variety* of adenoid has its origin specially in the fibroid appendages of the mammary gland; that it is essentially prolifero-cystic in its mode of development; and that it does not invade the gland itself, but spreads by a kind of diffusion from the original growth into special favouring tissue, after the fashion of some forms of cancerous growths. The removal of the gland itself with these growths seems to be unavoidable, but the most important point to be attained by operation is the complete extirpation of the fibrous textures associated with them, as far as they can be reached beyond its margin, especially in the direction of the axilla.

May 19*th*, 1874.

IX. DISEASES, ETC., OF THE DUCTLESS GLANDS.

1. *A case of progressive caseous, and probably tubercular, disease of the lymphatic glands and spleen.*

By C. Hilton Fagge, M.D.

Sarah H—, æt. 35, was admitted into Guy's Hospital under the care of Dr. Pavy on October 27th, 1873, and died on November 4th. She had been a cook. She said that she had never had a day's illness until two years previously, when she married. She then weighed twelve and a half stone. Since then she had gradually wasted. She had had no children.

Her present illness began with sleeplessness and night sweats. Afterwards she had a bad ulcerated sore throat. Then a lump appeared in the groin, which increased in size. It gave her no pain until a fortnight ago, when it began to be painful and then burst, discharging a quantity of matter. On October 19th she noticed that her left labium was enlarged; it grew larger, and broke; and a watery fluid exuded.

She was very thin when admitted into the hospital, and pale, with an anxious countenance. Her legs were covered with spots, which itched so much that she was in the habit of sticking pins into them. She had great difficulty of breathing, and there appeared to be something in the trachea. There was a large suppurating glandular swelling, in the left groin, and another mass of glands could be felt above the left clavicle. Pulse 116. Respiration 20. Temperature 98°. On November 3rd, temperature 97·4°. Respiration 40. Pulse 120.

I made a *post-mortem* examination on November 4th.

The body was much emaciated. There was very considerable swelling of the left leg, and also of the left labium. The genitals presented no appearance of syphilitic disease; nor were the spots of eruption on the legs such as to suggest the idea of syphilis.

The arachnoid over the surface of the brain was opaque; otherwise the brain was healthy.

Each pleural cavity contained a considerable quantity of fluid. The lungs were compressed by this and by the enlarged glands in

the mediastinum and about the trachea. The collapsed parts of the lungs were by no means merely the posterior parts, but were rather the anterior parts, especially towards the apices.

The bronchial tubes were pale and contained no secretion.

The lungs themselves contained no tubercles, or at least none having the ordinary characters. Here and there, close to the surface, there were a few masses nearly as big as peas, and which were perhaps of this nature. They looked whitish and granular on section. They were not at all like syphilomata.

The heart weighed 9 oz.; it was healthy.

The lymphatic glands throughout the body were diseased in a very remarkable manner. As the disease appeared to have begun in the left groin, it will be convenient to start from that point in describing it. There was an open sore, and into it projected two or three masses as big as walnuts, apparently portions of inflamed gland-tissue. All round the external iliac artery there was suppuration and great swelling of the glands. One abscess in particular, of the size of a billiard ball, overhung the brim of the pelvis on the left side, in a line with the broad ligament, which was drawn up and stretched by it. At first I supposed that this abscess was in the left ovary, but subsequently the ovary was found to be quite firm and healthy. The left Fallopian tube was wound round the ovary, and projected as an elevation upon the surface of the broad ligament. When cut into it was found to be greatly thickened by some old inflammatory action, but there was no suppuration about it. The uterus was small and healthy. The right Fallopian tube was closed at its extremity, which was converted into a rounded puckered body, without any fimbriæ. The tube was neither distended nor inflamed.

It was thus evident that there had formerly been inflammation of the appendages of the uterus. But I did not think that there was any reason for supposing that this had been the starting-point of the disease of the lymphatic glands, although it certainly happened that the seat of the most free suppuration was near the left broad ligament. The large abscess above mentioned had made its way into the left psoas muscle, and formed a cavity of considerable size in its substance.

From the left side of the pelvis the enlargement and suppurating condition of the lymphatic glands extended along the whole length of the spine into the neck. The aorta and vena cava ran through

a dense mass of glands, varying in size, which when cut into were generally found to have points of suppuration in their interior. They were removed *en masse*. Along the thoracic aorta there were glands more than an inch long.

A similar condition extended down the right brim of the pelvis into the right groin, but there the glands were simply swollen, and not suppurating.

The glands in the portal fissure were affected in precisely the same way as those lying in front of the spine. I omitted to observe the state of the mesenteric glands.

Within the chest there was an immense mass of glands about the base of the heart, the bifurcation of the trachea, &c. Along the trachea they extended up into the neck, and were continuous with other masses of enlarged glands in the posterior triangles. Of these the mass in the left side was the larger; many of the glands there were each an inch long, and suppurating freely. Low in the right side of the neck the glands were suppurating.

The glands about the roots of the lungs formed several abscesses, which must have contained some drachms of pus each. In one instance the fluid was mucoid and semi-transparent. At one spot in the mucous membrane of the left bronchus there was a patch as if an abscess were on the point of breaking through into the tube. There was, of course, a good deal of black pigment in the bronchial glands.

In the right axilla no enlarged glands could be felt, and in the left only quite small ones.

It must be added that in the majority of the glands the process of suppuration was only commencing, in the form of purulent points. In at least one instance a zone of suppuration towards the periphery of a gland cut off a central mass which was evidently forming a core or slough. Those glands which were not suppurating looked greyish-white and granular on section. In other words, they were exactly like tuberculous glands; not at all like the enlarged glands in Hodgkin's disease.

The intestines were free from tubercle.

The liver weighed 74½ oz. and looked very bulky, but its tissue seemed quite healthy. The intralobular venules were very distinct, and surrounded by reddish zones.

The spleen weighed 24¼ oz. It contained numerous masses of the size of walnuts or smaller. These were both easily seen and felt as slight eminences upon the surface of the organ.

On section they appeared to be made up of a number of small whitish or yellowish grains, interspersed in the substance of what seemed to be healthy splenic tissue. They looked as if they were softening down, but to the touch they were firmer than the other parts of the organ. At one or two spots only was the appearance that of a yellow substance at all resembling that of a minute gummatous tumour.

The left tonsil presented a little depression, pitted, and such as might in life have been called an ulcer. There was no redness about it, and on section no proof of inflammation.

No nodes were discernible on any of the bones.

Remarks.—The interest of this case lay in the question whether it was of syphilitic origin, as had appeared probable from the clinical history, or whether the disease was a primary affection of the glands. I am myself strongly disposed to adopt the latter alternative.

In many respects the case is very similar to one in which I made an autopsy in the year 1872, and which my colleague Dr. Goodhart published in the 'Guy's Hospital Reports,' vol. xviii, p. 407. It is that of a young man, æt. 22, who had his right thigh amputated for pulpy disease of the knee. There was caseous disease of the glands extending from the right groin upwards along the psoas muscle to the right lumbar region, to the portal fissure, to the root of each lung, and into each axilla and into each side of the neck. From the bronchial glands masses of a cheesy material spread into the left lung at its root.

A third instance of a similar form of disease has come under my notice in the present year (1874), in a patient who died of fibroid disease of the heart, and whose case is published in another part of this volume. She was admitted into a surgical ward for disease of the glands on the right side of the neck, and after death it was found that caseation of the lymphatic glands extended upwards to the base of the skull and downwards in the chest as low as the pericardium. The spleen contained numerous caseous tubercles the size of millet-seeds.

A point of very great interest in all these cases is the fact that the disease should have progressed, involving more and more of the glands, until the case at last terminated fatally. This is in marked contrast with the well-known frequency with which so-called scrofulous disease of the lymphatic glands occurs in childhood, both in the neck and even in the abdomen, without tending to

advance so as to affect the lymphatic glands throughout the body or directly to destroy life. At first sight the contrast might appear so great as to show that there must be an essential distinction between the two classes of cases. But I think that similar contrasts may be found in the tendencies of other admittedly tuberculous diseases at an early, as compared with a more advanced, period of life. Is not tubercular peritonitis perhaps always a fatal disease in adults, whereas in children it is not infrequently recovered from? And are not caseous and calcareous masses often found in the apex of one of the lungs of a person who has died of some other disease, which masses are undoubtedly the relics of some affection of the lung that had existed in early life, and which (whether tubercular in a strict sense or not) would in an adult have almost certainly progressed and developed a fatal phthisis?

For my own part, indeed, I am disposed to call this remarkable affection of the lymphatic glands, a *tubercular* disease. I would at the present time rest the definition of tubercle on two separate criteria :—1. That the early stage of the growth should consist of a lymphoid tissue; and 2, that this should have a tendency to undergo caseous change, and to remain for a shorter or longer period in the caseous condition. The recognition of this double basis for the use of the word tubercle removes, as I think, the main difficulties which have stood in the way of a logical employment of that term. The first criterion distinguishes from tubercle those caseous masses which are derived from simple inflammatory products, and likewise those which are the results of the degeneration of carcinomatous or sarcomatous growths. The second criterion distinguishes from tubercle such forms of lymphomatous growth as occur in Hodgkin's disease, in which there is little or no tendency to caseation.

In the case of the lymphatic glands and the spleen, which usually consist of a lymphoid tissue, it is, of course, difficult to draw a line between simple inflammatory overgrowth and tubercle in the early stage of the disease. Here I think that the marked tendency to caseation may fairly be taken as indicating that the affection (as in the case which forms the subject of this notice) is really tubercular.

It may, perhaps, be objected that in only one of my three cases was there tubercular disease of the lungs. And to such an argument I am disposed to attach very great weight, for it appears to me that those forms of disease of which the tubercular nature is

doubtful must be studied in the future mainly by a diligent investigation of the kind of morbid changes in other organs which occur coincidently with them. But I think that (independently of acute tuberculosis, which is, perhaps, of an infective nature) we must at the present time recognise at least five kinds of chronic tubercular disease, each of which presents distinctive peculiarities in the organs which it attacks, while they all possess alike the characters of tubercle, as I have ventured to define them. These are—(1) Ordinary tubercular phthisis, with an especial tendency to be associated with tubercle in (*a*) the intestine, and (*b*) the larynx. (2) Tubercular disease of the serous membranes, viz. the pleura, the peritoneu m and sometimes the pericardium, with a tendency (as Dr. Moxon has pointed out) to invade the Fallopian tubes, and even to extend down into the uterus in the female, and (as I think) to attack the epididymis of the testes in the male. (3) Caseous disease of the kidneys and genito-urinary mucous membrane, extending into the vasa deferentia and so to the testes of the male. (4) Caseous disease of the supra-renal capsules (Addison's disease). This is associated with other tuberculous diseases (especially early phthisis of the lungs and disease of the vertebræ) with so great frequency that I cannot doubt that it is really a form of tuberculous disease. And I may mention incidentally that I have lately seen a case of tubercle of the brain in which there was also tubercle of one supra-renal capsule, a point of considerable interest, since Virchow has suggested an analogy between these organs in their common liability to glioma. (5) Caseous disease of the lymphatic glands, associated (as in two of the three cases mentioned in this paper) with a similar affection of the spleen.

November 4th, 1873.

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2. *Exophthalmic goitre with enlargement of thymus.*

By James F. Goodhart, M.D.

The patient from whom the specimens were taken was a female, æt. 29. She came under the care of Mr. Higgens, at Guy's, for the extreme prominence of her eyes. To remedy this defect it was proposed to stitch the eyelids together temporarily, and for this

purpose methyl ether was administered to procure anæsthesia. She unfortunately died from the anæsthetic. No previous history was obtained.

The account of the *post-mortem* is as follows:

Fair complexion; eyeballs still prominent; nourishment good. The cranial bones were normal; arachnoid and pia mater healthy; arteries good. Brain weighed 50 oz.; venous blood not excessive. Faint ether smell about the brain; both it and the spinal cord were perfectly healthy.

The orbit showed nothing abnormal; the muscles were of full size, but the fat and connective tissue did not appear to be increased either in quantity or density.

Chest, &c.—Cervical glands universally enlarged, but only to a slight extent; they were red and fleshy. Those more especially noticeable were a chain running up alongside the trachea on either side behind the thyroid, while a lobulated mass of thyroid-like tissue, about an inch long, was situated on the right side of the median line immediately below the hyoid bone. The *thyroid* itself had two lobes, both enlarged, measuring together $3\frac{1}{2} \times 3\frac{1}{2}$ inches, which showed the usual form of fleshy hypertrophy, without any admixture of cysts or colloid matter. The gland went well to each side of the trachea, but did not compress that tube. Immediately below the thyroid body, but apparently unconnected with it, came a large apron of gland substance, pale but having a like fleshy appearance with the thyroid, and occupying the anterior mediastinum from the top of the sternum to a little way down the parietal layer of the pericardium. It was covered by a thick coat of fibrous material, which, as in the case of the capsule of the normal thymus, was easily separated from the gland. This growth, which may be called a regenerated thymus, consisted of three flattened lobes.

Microscopically it was made up of very soft lymphoid tissue, the cells being in excess.

The glands at the bifurcation of the trachea, though not large, were cheesy from old disease; those in the abdomen scattered through the mesentery had the same reddened fleshy appearance as noticed in the neck and mediastinum. The lumbar glands were healthy.

Spleen $12\frac{1}{2}$ oz., firm; Malpighian corpuscles plain.

Heart of normal form, weight about 11 oz.

The muscular wall of the left ventricle, though not excessively large, was decidedly thick and solid; therefore, probably, for a

woman to some extent hypertrophied. All the cavities contained fluid blood. The valves, &c., were perfectly healthy.

The vena cava superior and great veins at the root of the neck were very full of dark liquid blood. They were all somewhat closely embedded in an excessive amount of fibrous or dense connective tissue, which was everywhere present both in the neck and mediastinum; so much so that it was only after considerable dissection the parts could be approached for a careful examination. The left vena innominata passed behind the upper part of the mass styled thymus, as it tailed away towards the thyroid, and in this situation was a plexus formed by two large inferior thyroid veins on each side; the large trunks uniting together by very small branches, and also entering the innominate veins by similar small branches. The carotids and jugulars were quite normal.

The stomach and bowel were quite healthy; suprarenal capsules healthy; kidneys healthy. One ovary contained a large corpus luteum, while the uterine cavity contained some blood-coloured fluid.

Sympathetic.—On the right side the superior cervical ganglion was placed low, being on a level with the upper part of thyroid cartilage. It was two inches long, fleshy-looking, and red; but not abnormally so. It may be said to have looked normal, though, if anything, swollen rather than atrophied. Middle ganglion wanting on this side; inferior normal. The cardiac nerves all seemed normal, perhaps large.

On the left side the superior cervical ganglion was much smaller than on the other side, the middle present as three small ganglia coalescing into one; it looked normal, inferior normal. The cardiac nerves here also appeared large. The splanchnic nerves all appeared healthy; the pneumogastric also. The cardiac plexuses were involved in much fibrous tissue. The semilunar ganglion on each side was large and fleshy looking. The nerves proceeding from them were healthy looking. On both sides, but more noticeably on the left, a large gland was very close to the ganglion.

A microscopical examination of the cervical ganglia showed that the nerve-cells were there in quite a healthy condition, and a comparison with specimens of healthy sympathetics made it evident that nothing more abnormal could be attributed to the ganglia in this case than an increase of the investing connective tissue, with which, in common with other parts of the neck and thorax, it was probably clothed to excess.

This case was brought under the notice of the Society chiefly because of the somewhat rare occurrence of *post-mortem* examinations in this always interesting disease; partly also because its pathology can hardly as yet be said to be cleared up beyond all question; and partly because the extent of gland growth in this particular instance was certainly excessive. It is unfortunate that the appearances of the preparation after hardening in spirit but faintly, if at all, represent the enlargement of the thymus and the swollen condition of the glands observed in the recent state; but then, if not now, they were manifest enough.

The morbid conditions found may be summarised thus:

1. Enlargement of the thyroid.

2. Growth of gland tissue in the region of the thymus, with a general tendency of the lymphatic glands elsewhere to enlarge.

3. Density and excess of the mediastinal and cervical connective tissue.

4. Considerable enlargement of the thyroid veins, and some slight hypertrophy of the heart.

5. Thickening of the sympathetic capsule.

Of these five the first is so frequently found in this and also in other states that I pass it by as unable of itself to afford us any evidence of the nature of the disease, but as far as I am aware the thymus and lymphatic glands are not thus likely, except under recognised morbid states of which symptoms were not present here, to become hypertrophied. Their being so in this instance, unless, indeed, the case be merely one of persistent thymus in addition to goitre, a hypothesis which does not appear probable, taking into consideration the infrequency with which that condition is met, is, I take it, evidence of a direct tendency to general glandular hypertrophy, explain that hypertrophy how we may.

Now, the clinical history of these cases seems to prove incontestably that the original swelling of the thyroid is in many cases due to mere excessive blood-supply. Stokes, Trousseau, and others, give cases in which the thyroid has enlarged, and the eyeballs have become prominent in a single night. Surely this would be impossible on any other hypothesis.

Then supposing the exciting cause of this hyperæmia to remain persistent, there must follow the natural consequences of over nutrition, viz., hypertrophy of the glands. It would also be very unlikely that any alteration in the blood-supply should so affect the

glands especially, as to make them all enlarge, and not at the same time cause like hypertrophic changes in the other tissues, except in so far as they, being more richly supplied, would of course show more evident results. In this way may be explained the density and excess of the mediastinal connective tissue in the present instance as well as in other cases.

But further than this, not only does the hyperæmia induce hypertrophy, but as the increase of tissue goes on, an increased demand is made upon the blood, and new channels are formed. Thus the two states re-act upon each other, hypertrophy causing hyperæmia, hyperæmia stimulating to new growth—a reaction that can hardly be controlled.

Lastly, as to the sympathetic.

The morbid changes found as described by Trousseau amount to redness, increase of vessels, an abundance of connective tissue with cell growth, while the ganglion-cells are few, small, and in some instances reduced to simple granule masses. The nerve-tubules are few.

In my case without doubt the connective tissue was increased, but after a careful comparison with healthy ganglia I could not say that the nerve cells were in any way altered.

A very similar state of things is described by Dr. Moxon in a case of exophthalmic goitre under the care of Dr. Wilks, published in the Guy's Hospital Reports for 1869-1870. Dr. Moxon, after describing the appearances, goes on to say, "whether this excess of fibrous tissue be really a diseased state connected with an altered function of the ganglia, or whether it be an unimportant accidental condition in this particular sufferer from exophthalmos, each must judge for himself." He further proceeds to argue that "such a fibrous state would characterise a cirrhotic state, and cirrhosis being only known by the atrophy of the gland or nerve-cells, inasmuch as no atrophy had occurred, the excess of fibre might only be accidental." The same argument would hold good in my case, only the condition can hardly be called accidental when many have observed it, and when associated, as in this case, with a very great increase of connective tissue in the parts around.

What the whole pathology of exophthalmic goitre may be facts are still wanting to show; part of it, viz., a tendency to hypertrophy of the connective tissue of the head and neck, enlargement of the heart and thyroid and sometimes of other glands, dilatation of

vessels, &c., has been described in a sufficient number of instances to make it probable that the cervical sympathetic when it has been found to be diseased has undergone changes in common with the parts around, that is to say, has been implicated secondarily and not primarily. The clinical history supplies an adequate explanation of the state of hypertrophy of tissue in this, that the onset of the disease in many cases is explicable in no other hypothesis than that of disturbed vascularisation, and we may further assume that if the early blood distension of the parts be sufficiently prolonged, the subsequent demand by the overgrown tissues of increase of supply would be likely to prevent a return of the vessels to their normal state quite independently of the primary disturbing cause, which might entirely have ceased to exist.

As Virchow has said in his 'Krankhaften Geschwulste,' the autopsy can only prove what the terminal conditions are; we want above all things to get at the troubles of the onset. The troubles of the onset all point to some intra-cranial neurotic state, such as we provisionally call functional, and place this disease in close relation with the phenomena of blushing.

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3. *Adenoid disease.*

By William Harrison Cripps.

E. T—, æt. 23, had enjoyed good health till 1870. She then first noticed that her abdomen was enlarged, but with this exception continued well till the beginning of 1872. At that time she caught cold, which brought on severe cough.

In April of the same year she was admitted into the Brompton Hospital, being discharged three months later with greatly improved health. The swelling in the abdomen, which had slightly increased, was supposed to be dropsy.

In January, 1873, she was very anæmic and much emaciated, the abdomen being considerably enlarged, with great tenderness. Occasional sickness and diarrhœa. Appetite very fanciful; would not touch meat, but showed great craving for milk and farinaceous food.

In June of the same year the enlargement in the abdomen had

assumed a more globular form (at first it had been hard and irregular). To the fingers a sense of fluctuation was communicated.

The glands on each side of the neck now became swollen and very tender.

As the disease advanced the tenderness of the abdomen, diarrhœa, and sickness diminished and she took more food.

The disease of the lungs rapidly advanced during the last month, and she died on November the 25th, 1873.

On opening the abdomen the spleen was found enormously enlarged, occupying all the left side of the cavity and extending across the middle line to the right. On removal, the spleen weighed ten pounds; the liver was also considerably enlarged.

The glands in every part of the body were greatly enlarged.

The arteries supplying the glands were many times their natural size, the alar thoracic being as large as the radial. In the axilla the glands were as big as large-sized grapes, and hung round the artery much as grapes do round their stalk, each gland receiving a large branch. The abdominal aorta was very small, lungs not examined.

Sections of the spleen and liver under the microscope showed that the increase in size was in great part due to hypertrophy of the connective tissue elements in the glands, and in places well-marked lymphatic tissue could be distinguished.

December 16*th*, 1873.

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4. *Leucocythæmia, with hypertrophy of the spleen and lymphatic glands, and lymphadenoma of the pleura, mediastinum, liver, kidneys, and epididymis.*

By Frederick Taylor, M.D.

Thomas S—, æt. 12, was admitted into Guy's Hospital, under my care, June 25th, 1873.

His father is subject to rheumatism. A grandfather suffered from cancer of the scrotum, and one of his aunts died from cancer of the breast. His mother, brothers, and sister are healthy.

When a baby, he had measles; four years ago he had rheumatic fever; three years ago scarlatina, mildly; and in January last a second attack of rheumatic fever. Since that time he has been well until

five weeks ago, when his face, abdomen, arms, and legs swelled, and at the same time he complained of pains in the region of the liver; he did not feel so ill as to be obliged to keep his bed, and he has had no cold nor shivering. His mother states that the boy has been always well nourished and healthy looking, and that a few years ago, after a fright, he suffered from night terrors for two years.

On admission, he is a fairly developed boy, with light brown hair, full face, and heavy aspect. The face is flushed, giving him an appearance of health; his mother, however, states that in the morning his face is pale and the lips blue; in the middle of the day the face is flushed, and at night the pallor again returns.

The tongue is furred and brown, the appetite not very good, the bowels constipated, and he complains of thirst.

The organs of respiration appear healthy, with the exception of dulness under the left clavicle; the cardiac dulness and heart's sounds are normal.

The abdomen is tumid and hard, but without fluctuation. The lower edge of the liver projects considerably below the ribs, and can be felt two inches above the umbilicus—reaching the anterior superior iliac spine on the one side, and the spleen on the other. This last organ forms a large hard mass, occupying the left side of the abdomen, its anterior margin lying two inches from the umbilicus, and its lower end about the same distance above the symphysis pubis. In the anterior margin, opposite the umbilicus, is a very distinct notch. The splenic dulness reaches the ninth rib in the axillary line.

The lymphatic glands in the neck, axillæ, and groins are moderately enlarged; they can be moved easily upon one another and under the skin, are not painful, nor tender, nor hard. The thyroid gland is not enlarged. The urine is scanty, has a specific gravity of 1025, and deposits a large quantity of urates, but contains neither albumen nor sugar. Morning temperature, 102° F.; pulse 124; R. 22.

The blood examined under the microscope was seen to contain a very large proportion of white blood-corpuscles, which were not at that time counted, but in another specimen were estimated to form about one tenth part of the whole number of corpuscles in the field.

For the first few days he improved slightly, but afterwards he became gradually worse. He generally preferred to be out of bed, but was unfit for any exertion, and his feet began again to swell. His urine was mostly scanty, with an abundant deposit of urates.

On July 3rd, the spleen was observed to be larger, its anterior margin reaching to within one inch of the umbilicus, and its lower end over the middle line of the body.

July 5.—The tonsils were large and hard, and they afterwards interfered considerably with his respiration.

On July 14th he had some purpura on the arms.

On the 18th he left the hospital. During his stay the temperature had varied between 100° and 102°. The dulness at the left apex had become more marked, the inspiratory sound was impaired, and some tenderness had been observed at this spot.

After three days he returned very much worse, having more dropsy, purpuric spots on the chest, abdomen, and legs, scanty urine, noisy, laboured breathing, and ulcerated gums. The œdema and dyspnœa increased, and he died on August 2nd.

In a specimen of blood taken a few days before his death, the white corpuscles were observed to be mostly of comparatively small size, measuring $\frac{1}{3000}$ of an inch in diameter; each corpuscle was nearly filled by a single nucleus of large size.

The following notes are from Dr. Hilton Fagge's account of the *post-mortem* examination made August 4th, 1873:

Brain, cranial bones, dura mater and sinuses, arachnoid and pia mater, healthy. Bones of spine, &c., not examined.

The cervical, axillary, and other lymphatic glands were greatly enlarged; most of them were reddish grey on section, mottled with parts of a deeper red colour. They were moveable, and quite separate from one another in the neck and axilla; also behind the main bronchi and below the bifurcation of the trachea. The glands in the portal fissure were also distinct from one another, and were of a paler and more uniform grey colour than the rest. Along the lumbar vertebra, and extending into the pelvis along the great arteries, there was an irregular mass of enlarged red glands, and it was not clear whether the growth had not extended beyond their capsules, into the adjacent structures, for they were all matted together; however this may be, it is certain that in the anterior mediastinum a large flattened mass which existed in this situation had invaded tissues outside the glands. It was, perhaps, an inch thick in the centre, and the left innominate vein ran through it about midway between its anterior and posterior surfaces. Hence, although it thinned off below (where it ran down over the pericardium for some distance) very like an enlarged thymus, it is clear that the mass

could not have been entirely in that organ. It was not homogeneous in texture, but at its lower part there was a wedge-shaped mass of whitish-yellow tissue of almost cartilaginous hardness, intercalated between two softer and more reddish-looking masses. Parts of the mass appeared to be degenerating. The growth did not invade the pericardium when it passed down in front of it; nor did it extend along the vena cava or other vessels either towards the heart or into the lungs.

The right pleura contained a good deal of serum, by which the lung was in part compressed. Its tissue (and that of the left) were both quite healthy. There was no growth advancing from the root of the lung into its substance.

Each pleura had extensive growths of the same character, but of a homogeneous red colour, spreading over its surface in long flat bands, running downwards and forwards in the direction of the ribs. On stripping off the pleura from the ribs it came off quite freely, carrying the growth with it. Indeed, this appeared to be connected rather with the free surface of the membrane (from which it projected in the form of a flat elevation), and vessels of the deeper surface of the pleura passed across the under surface of the growth without affecting it. These masses were more marked at the back part of the chest than in front, but some were seen close to the sternum. They corresponded in position to the ribs and not to the interstitial spaces, but it was difficult to see what led to their following the line of the ribs at all.

Heart ecchymosed on its surface. The muscular substance looked peculiarly dense and homogeneous; in its cavities was a little semi-transparent, soft, pale coagulum. The pericardium contained a good deal of fluid.

The pharynx was inflamed and covered with portions of ashy-grey membrane, rather diphtheritic in character. These were not particularly marked on the tonsils; nor was there any noticeable enlargement of these structures. The entrance of the larynx was of a reddish-purple colour, and much swollen. Œsophagus, stomach, and ileum healthy. Peyerian glands rather distinct, with black dots, but presenting no growth.

The liver weighed 54 oz. Its tissue was not very obviously altered; its lobules were fairly distinct, not larger than natural. At the portal fissure it was not at all obvious that any growth ran along the vessels; but on cutting into the organ it was easily seen that

there was a small quantity of a reddish growth in the medium-sized portal canals. In the left lobe this became increased in amount, and towards the thin edge the portal twigs were enclosed in rather a thick sheath of reddish tissue. Indeed, on the under surface, one small vessel was enclosed in a thick tube, which projected as a cylindrical ridge from the surface of the organ; and there were several flat reddish raised growths from the peritoneal surface near this point, exactly like those described as growing from the parietal pleuræ. No reaction with iodine.

Spleen, 51 oz. On section it had exactly the appearance of a healthy organ. It cut with a rather granular surface, becoming of a brighter colour where exposed to the air. There was no nodule in it whatever. The surface presented a few small paler spots; and on incising this the pale colour was seen to extend for a short distance, rather irregularly into the substance of the organ. This appearance, and the whole character of the affection of the spleen, was exactly what is ordinarily seen in "splenic leucocythæmia" as distinguished from "Hodgkin's disease."

Kidneys, 7 oz. Somewhat mottled, but apparently healthy, with the exception of two whitish nodules; the larger of these was of the size of a pea; it was embedded in cortical substance.

Bladder healthy.

Testes healthy, but small, of about the size of a sparrow's egg; their tissue deep purple, not allowing tubules to be drawn readily out by the forceps; the epididymis on each side was decidedly enlarged, being from two to three times the size of the testis, and of a whitish granular appearance on section. Each tunica vaginalis contained some fluid.

Portions of the hypertrophied lymphatic glands, of the tumours from the pleura, and mediastinum, and of the liver and epididymis, were reserved for microscopic examination.

Lymphatic glands.—Very thin sections were readily freed from cells, and presented a beautiful network of very fine anastomosing fibrils, running between the blood-vessels and fibrous trabeculæ. The fibres forming the network were excessively fine, and the points of union, triangular or polygonal in shape, measuring $\frac{1}{3000}$ inch or more. Here and there nuclei could be seen at these points, but generally they were wanting.

The vessels were very numerous, measuring from $\frac{1}{2000}$ inch to $\frac{1}{900}$ inch in width, lying at an average distance of $\frac{1}{300}$ inch

or $\frac{1}{400}$ inch from each other or from the trabeculæ, and containing several white blood-cells with their large nuclei.

Tumours from the pleura.—These closely resembled in their structure the lymphatic glands just described; the trabeculæ were more distinct and numerous, and had on the whole a direction perpendicular to the surface of the growth (*i. e.* to the free surface of the pleura). The tissue was less easily freed from the cell elements by washing.

Mediastinal tumour.—The portion hardened for examination consisted, firstly, of a soft, friable, lobulated mass, having a microscopic structure exactly similar to that of the lymphatic glands above described, but from its connections on all sides, and especially from its free lobulated margin, appearing to be an entirely new adenoid growth. Secondly, of a portion of an adjacent muscle, involved in the spread of the lymphatic elements. Here were seen muscular bundles, cut transversely or obliquely, separated and surrounded by a number of cells, which lay closely packed in amongst a quantity of white fibrous and elastic tissue.

These cells were with great difficulty removed from the supporting tissue, and this had not the delicate reticular structure of the softer growth above mentioned, but was so dense that only occasionally could a resemblance to a network be recognised. The cell growth not only formed extensive tracts, separating the muscular bundles, but also made its way into these, isolating the muscular fibres themselves, but without injuring the striation.

Liver.—Here were seen on section, numerous small patches of lymphoid growth, and especially broad areas surrounding the transverse section of the portal canals. The cells here also lay in the midst of dense fibrous tissue.

Epididymis.—On examining a section across the entire mass, it was seen to consist, firstly, of a nearly circular area, about four millimetres in diameter, containing sections of tubes; secondly, of a portion nearly surrounding this, denser, more fibrous, and free from special structures.

In the former, the sections of convoluted tubes were transverse, oblique, or longitudinal, their fibrous coats and lining of cylinder epithelium being retained in a normal condition; they lay widely scattered in a quantity of new tissue, consisting of small lymphoid corpuscles infiltrating an abundant fibrous stroma. For the most part the stroma did not appear to have any definite structure, being

made up of wavy bundles of white fibrous tissue and numerous fine elastic fibres, the course of which was generally parallel to the walls of the tubes, but was less regular in the larger intervals between these.

In some parts, however, the thick bundles of white fibre were so arranged, as to form a close network with elongated and oval meshes, in which the corpuscles were pretty uniformly distributed, in such a manner that each corpuscle seemed completely isolated from those surrounding it. This might be fairly called an adenoid tissue, but at the same time was very different from that seen in the hypertrophied glands, in the pleural new growths, and in the softer part of the mediastinal tumour; these latter being distinguished by their vascularity, the abundance of cells, and the great delicacy of the fibres constituting the stroma.

The remaining portion of the epididymis was made up of white fibrous tissue, in the form of thick bundles running parallel to each other and to the surface of the organ; and numerous lymphoid corpuscles embedded in the fibres, often in elongated or oval groups, around which the fibres coursed, but without forming a characteristic meshwork.

The cells or lymphoid corpuscles were similar in all the organs examined. In shape they were round or oval, and they varied in size from $\frac{1}{4000}$ inch to $\frac{1}{2500}$ inch. Each contained a single large nucleus, nearly filling the cell.

Remarks.—The above is a very perfect example of a series of cases in which leucocythemia is associated, not only with enlargement of the spleen and of the lymphatic glands, but also with the development of new growths in other organs and in subserous spaces. During life the case was recognised as one of "leuchæmia splenica et lymphatica," and the blood presented the condition described by Virchow, as occurring when the glands as well as the spleen, or the glands alone, are involved. The presence of the lymphoid tumours might fairly lead one to regard the case as standing intermediate between leucocythæmia, on the one hand, and Hodgkin's disease and multiple lymphoma (without leucocythæmia), on the other; from the latter cases, however, it still differed, not only in the presence of the peculiar condition of the blood, but also in the size and structure of the spleen, and in the slight enlargement and want of induration of the glands.

If, as some observers think, these forms of disease are essentially the same, the leucocythæmia being a secondary result, or peculiar to

a certain proportion of the cases, an explanation is still required of its presence in some cases and its absence in others. In reference to this point, and to the observation of the association of leucocythæmia with a hyperplasia of the medulla of bones, I examined only the sternum; this, however, was healthy, and no complaint had been made during life which could be referred to any change in these structures.

In conclusion, the case presents some interest, as showing another organ, the testicle, invaded by the lymphatic new growth.

December 16th, 1873.

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5. *Lymphoma affecting cervical glands and connective tissue between the larynx and œsophagus.*

By Andrew Clark.

The patient from whom the specimen was taken was a woman æt. 75, who had always enjoyed excellent health up to nine months ago. She knew of no predisposition in her family to any hereditary disease.

I first saw her in the month of May of the present year, when she came to me as an out-patient at the Middlesex Hospital, complaining of pain in her neck and occasional severe attacks of dyspnœa, which she said had been from time to time troubling her during the last three months.

On examination I found a tumour about the size of a child's fist, situated in the middle line of the neck, bulging equally on both sides and moving with the larynx; there were also enlarged lymphatic glands on both sides of the neck. She said the lumps were rapidly increasing in size, and she was losing flesh. I thought then she was suffering from some malignant tumour of the thyroid body, and the cervical glands were secondarily affected, but ordered her iodide of lead ointment and iodide of potassium internally, which, rather to my surprise, in two months almost dispersed the thyroid tumour. She appeared to be progressing favorably, the pain being

less severe and the attacks of dyspnœa less frequent and less violent, until July 10th, when about 11 p.m. she became very livid and her friends brought her to the hospital, thinking she was dying. She was then relieved by the application of warmth and anti-spasmodic remedies, which were continued as well as the local application of mercury and opium ointment ordered by Mr. Nunn, under whose care she had been placed. During the ensuing week she had several more severe attacks relieved in the same way, and on the 19th, at 11.30 a.m., another which continued notwithstanding the same treatment as before. I saw her at 12.30, when she had become perfectly livid and almost pulseless, and immediately performed tracheotomy, which was attended with some difficulty owing to the depth of the trachea, but the opening was made in time to revive her.

For a few days she breathed through the tube and then through the natural passage, and on August 4th the tube was removed and the wound healed by the 26th, after which she went on very well and left the hospital October 3rd, with only a few enlarged cervical glands, which gave her no pain.

Three weeks after this her son came to the hospital to say she was as bad as ever, and she was readmitted and found to be suffering from an attack of acute bronchitis, no change having taken place in the condition of the neck. On the evening of the 7th November she had another attack of dyspnœa, during which she died, notwithstanding the performance of a second tracheotomy by the house-surgeon.

At the *post-mortem* examination, made twelve hours after death, the larynx, tongue, and neighbouring parts were removed together, and there was found to be a tumour situated between the trachea and œsophagus, extending from the third ring of the former to the bifurcation, and its pressure has produced considerable absorption of the cartilage; there is no trace of the thyroid isthmus left; several of the glands in the cervical chain on either side are enlarged. On laying open the trachea and larynx from behind, the second tracheotomy opening is seen, and close to it the scar of the first, which is quite healed. The mucous surface throughout is studded with small tumours, about the size of a bean, hard to the touch, and beneath the mucous membrane, one being immediately below the larynx. A section from any of the growths placed under the microscope presents all the characteristics of lymphoma.

The case seemed to me worth putting on record, as it presented several features of interest. The exact situation of the tumour was for some time obscure, as also its structure, but from its yielding so readily to treatment cancer was early excluded. The frequent attacks of dyspnœa must have been due to pressure on the recurrent laryngeal nerve and not to the actual pressure of the growth on the trachea.

December 16th, 1873.

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6. *Cast, photographs, and drawings of a case of lymphoma displacing the trachea.*

By Lennox Browne.

Mrs. S—, æt. 33, of Newent, in Gloucestershire, was admitted, December 18th, 1873, into the Middlesex Hospital, under the care of Mr. Nunn, sent by Mr. Norris Marshall, on account of a large tumour of the neck. The patient had an infant at the breast, between two and three months old.

Her history was that, five years previously, she had first noticed a swelling on the right side of the neck, which was nearly as large as the present tumour. She stated that it had suppurated and burst, and had then almost entirely disappeared, the only swelling which remained being due to a goitre from which she had suffered from childhood.

When four months pregnant with her present infant, that is, about eight months previous to admission, the swelling recommenced and has gradually increased to its present size.

On admission, she is seen to have a tumour occupying the whole of the posterior triangle of the neck. It wedges forwards underneath the sterno-mastoid, and backwards, but less obviously, under the anterior margin of the trapezius. Its base appears to be at the clavicle, to which also it seems to be fixed, but on percussion of the chest, dulness is found to extend about three fingers' breadth below the clavicle.

The right mamma is enlarged, somewhat indurated, and inflamed.

The veins of this region are unduly turgid from pressure either on the subclavian or directly on the internal mammary vein. The veins of the right upper extremity are also very prominent, but the limb itself is not œdematous.

The surface of the tumour is of an angry red colour, and, as the cast shows, presents numerous semi-spherical elevations of a darker colour than the general mass and having the skin covering them tense, shiny, and vein-marked. To the touch these prominences convey the sensation of fluctuation. Mr. Nunn punctured one of these with a fine trochar, but nothing beyond a few drops of scarlet blood escaped. These nodules are painful when handled. At the lower border of the tumour is the scar as of the opening of a former abscess.

Woodcut 12.

The photograph (Woodcut 12) well shows the extent of the upward limits of the tumour and of its protrusion outwards. Towards the middle line it pushed the larynx and trachea altogether away from their normal position, and on laryngoscopic examination (Woodcut 13), I found that the right vocal cord was entirely to the left of the

median line. The epiglottis was not at all distorted, but the right ary-epiglottic fold was greatly stretched. The right hyoid fossa was seen to be quite open, while the left was invisible. The free edge of the left vocal cord was seen rather than its superior surface, and the cavity of the left ventricle was fully exposed. In phonation the distortion was still more apparent.

Woodcut 13.

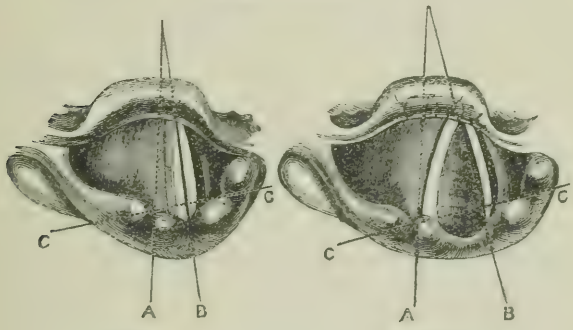

Fig. 1. Fig. 2.

Laryngoscopic appearance (fig. 1) in phonation, (fig. 2) in inspiration.
A. Median line.
B, C. Lines showing plane of displaced larynx.

There was no enlargement of the spleen or liver, but the patient suffers from continuous and troublesome though slight diarrhœa. There is not the least dyspnœa, even on exertion, and the patient can lie in any position. The voice is normal.

The patient returned to Newent January 5th, and the last account from Mr. Norris Marshall states that "the right breast is now much more swollen, particularly at the upper part, is red and angry looking, and will, he thinks, suppurate. The patient suffers much pain, and still has slight diarrhœa."

The interest of this case, which I have ventured to call one of lymphadenoma, although the constitutional symptoms are not yet well marked, is at this stage, perhaps, rather clinical than pathological. It is somewhat rare to see such considerable displacement of the trachea with absolutely no disturbance of the respiration. It is well known that while a very slight substernal goitre or other cause for pressure or constriction of the windpipe

low down in the neck will cause distressing dyspnœa, a very considerable enlargement of the isthmus or of one lobe of the thyroid gland will occasion no respiratory inconvenience; but if both lateral lobes of the gland be at all enlarged, so as to embrace the windpipe, difficulty of respiration and of deglutition are at once observed. Here we have, however, a very large glandular tumour combined with a bronchocele causing unusual distortion of the windpipe without any embarrassment of the respiration whatever. At a later stage, when the deeper glands become more affected, dyspnœa will in all probability become a prominent symptom.

January 20*th*, 1874.

P.S.—This patient died of exhaustion April 16th, 1874. Soon after her return home the right arm became much swollen and œdematous. There was also considerable induration and enlargement of the right breast and neighbouring glands. The deeper lymphatics did not appear to be so much affected as to cause any great pressure on the pneumogastric or recurrent nerves; and although the breathing was shorter, dyspnœa only became distressing a few days before death. No autopsy was allowed.

October 10*th*, 1874.

X. DISEASES, ETC., OF THE SKIN.

Xanthelasma multiplex; jaundice from gall-stone ?

By J. Wickham Legg, M.D.

In illustration of a case of xanthelasma which may be referred to in another part of this volume (p. 155), I wish to publish the following case of multiple xanthelasma, which occurred in Dr. Andrew's practice at St. Bartholomew's Hospital some years ago, but which has not yet been edited.

These notes were taken by Dr. Andrew in the out-patient room on May 6th, 1868, after the patient had been under his care for some weeks.

"Mrs C—, aged 36; married seventeen years; 9 children, youngest 14 months old, one dead; three miscarriages. Two years ago last December had a quarrel with her husband and a very great fright; about a week after, she began to turn yellow. They were then living near Aberdeen, and she seems to have had much anxiety and annoyance for some time previously. For the last three years she has been subject to flooding. The spots began to appear about six months ago, and were first noticed on the elbows as little pimples the colour of the skin. She has had much itching and irritability of the skin, which came on about two months after the jaundice, and is not nearly so bad now. At one time she used to be obliged to sponge frequently in cold water and could not sleep at night. The spots are most abundant on the elbows, palms, and soles; but on the palms (soles not seen) they are very slightly if at all elevated, resembling rather opaque spots in the skin, which presents a marbled appearance from their very great number. Does not sleep well, does not know why. Tongue clean; appetite uncertain; used to be fond of fat, but cannot take it now. Bowels regular, slightly costive. Motions during illness have been light coloured, but for last three weeks they have been almost natural. Urine said to be high coloured. Pulse 60. She has lost nearly four stone; used to weigh fourteen stone.

"About two or three weeks ago she passed something hard (? gall-stone), and her present improvement seems to date from that. Her complexion is now lighter, and the spots less than they were a few weeks ago."

The water-colour drawings of this case in the collection at St. Bartholomew's Hospital show the xanthelasma to have occurred chiefly in clusters; these clusters are most prominent over the ear, eyebrows, and alæ of nose, over the phalangeal joints of fingers, and the olecranon. Dr. Duckworth informs me that one of these patches over the elbow bled profusely when cut across, and was very painful. There are two yellow spots seen on the mucous membrane covering the gums over the alveoli of the two left outer incisor teeth.

There can be no doubt, from the microscopical examination of the cornea and skin in Virchow's case, that it was a specimen of true xanthelasma.* The xanthelasmic patches were very marked on the cornea and true skin, but most abundant in the popliteal space. There is no mention of the patient's having been jaundiced at any time, and it seems improbable that so accurate an observer as Virchow, already acquainted with Dr. Hilton Fagge's views,† would have omitted to report so striking a symptom if present. I am inclined, therefore, to think that this case of Virchow's is one of xanthelasma multiplex without jaundice. *May 5th*, 1874.

* Virchow, 'Arch. f. path. Anat.,' 1871, Bd. lii, p. 504. Kaposi (Hebra and Kaposi's "Hautkrankheiten," 2te Auflage, in Virchow's 'Handb. d. spec. Path. u. Therap.,' Erlangen, 1872, p. 252) thinks that some of Hutchinson's cases of xanthelasma palpebrarum are simply milium.

† See p. 509 of Virchow's paper.

XI. MISCELLANEOUS.

1. *Crystalline oxalate of lime vesical calculus.*

By W. Morrant Baker.

The specimen, a vesical calculus, weighing thirty-one grains, and composed of oxalate of lime, which projected from the surface in the form of large octohedral crystals, was removed by lithotomy from a boy æt. 11, who had suffered pain after micturition and some other symptoms of stone in the bladder for several years. He had been sounded twice during this period at different hospitals—on one of these occasions by myself—without the detection of the calculus. Of late the symptoms had much increased, and a short time before the operation the stone was easily detected.

On exploring the bladder with the forefinger after the removal of the stone a very distinct and broad papillary projection of apparently healthy mucous membrane was felt at what seemed to be the position of the opening of the right ureter. It seems not unlikely that this was caused by a lodgment of the calculus for a time at the lower end of the ureter, and that the long duration of symptoms of irritation in the bladder and the fact that the stone was not previously discovered may be thus explained. *December 2nd*, 1873.

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2. *Perforation of the thorax by the spike of a street rail.*

By C. de Morgan, F.R.S.

A man, æt. 32, was brought to the Middlesex Hospital on December 16th, 1873, having fallen from a height on to the spikes of some area railings, one of which penetrated the chest to the depth of

four and a half inches, and was then broken across, about three quarters of an inch remaining outside the chest-wall. The spike was square, one seventh of an inch in diameter, tapering at the extremity to a point. It penetrated the chest about an inch and a half below the inner third of the right clavicle. The spike was easily extracted, and the part covered with cotton wool steeped in collodion as the point was withdrawn. The breath sounds around the wounded part were natural, and he had little pain there. It was observed that the lung on the opposite side was dull. He lived till the following day.

The four upper ribs on the right side were fractured near their angles. There was about a pint of fluid blood in the cavity, but no inflammation or blood-clot in the track of the perforation of the lung, which was over three inches in length. On the left side were many recent pleuritic adhesions, and the lower lobe was the seat of considerable hepatisation, while in the upper lobe were numerous cavities containing thick creamy pus. *December* 16*th*, 1873.

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3. *Specimens of muscles from a case of trichiniasis.*

By Sidney Coupland, M.B.

These muscles, thickly infested with trichinæ, were taken from the body of a man, 33 years of age, lately in the Middlesex Hospital for bronchitis and phthisis, under the care of Dr. Greenhow. During the whole period of his stay in the hospital (two weeks) he suffered from extreme orthopnœa associated with marked muscular weakness.

All the voluntary muscles were most thickly crowded with encysted trichinæ, the cysts being all calcified, and it was difficult to say in what region the parasite most abounded. The diaphragm was almost as much infested as the intercostal and the more superficial thoracic muscles. The tongue and pharyngeal muscles, it will be seen, are also highly infested, the specimen showing well the abrupt limitation of the parasite to the upper third of the gullet.

that part of the tube being alone provided with striped fibres. The muscles of the eyeball, and even the tensor tympani muscle of the internal ear, also contained cysts. One grain in weight of a muscle of the thigh was found to contain 180 of the cysts, so that (roughly speaking) the man must have been the host of about 75,000,000 of these parasites.

The worm itself was found generally in a perfect condition, although in some of the cysts it had become shrunken and disintegrated. Occasionally a cyst was met with containing two distinct trichinæ coiled up side by side, a condition not often met with (*vide* Bristowe and Rainey, 'Path. Trans.,' vol. v; and Turner, 'Edin. Monthly Journal,' 1861). It is certainly curious that this does not occur more often, considering how closely the worms are grouped.

It is highly probable that the patient contracted the disease nine years ago, in New York, where he stayed eighteen months, for during that time he had an attack of "enteric fever," which was said to have nearly "lost him his life;" he was left in a very prostrate condition for more than twelve months, and his health had never been fully restored. *January 6th*, 1874.

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4. *Bothriocephalus latus.*

By Arthur Leared, M.D.

No instance of *Bothriocephalus latus* has been recorded in our 'Transactions,' and the rarity of the worm in this country induces me to bring the present specimen before the Society.

An officer who had lately returned from Canada and had served in the Red River expedition, consulted me on February 4th, 1874, because he had on that day noticed for the first time "something long and flat, of a white colour, with black marks," in his fæces. His general health was good, but he had suffered for some time from a sense of fulness with itching of the anus. I concluded that he was affected with tape-worm, and directed him to take at night after a long fast Kamala ʒij, and the same dose in the morning. The

result was the expulsion of the worm now shown. The worm measured twenty feet in length, and although the head was not discovered the great tenuity of the neck portion and the circumstance that it was only obtained in fragments made it probable that the entire worm had been expelled. The worm presented all the characteristics as regards the arrangement of the genital outlet and of the ovaries of the so-called broad tape-worm, but its breadth was barely half an inch, instead of being an inch or thereabouts, a dimension it sometimes attains.

A point of interest in the case lies in the fact that, while Switzerland, Sweden, Poland, and Northern Russia are the head-quarters of the worm, it is believed to be not native to many countries, and amongst others to the American continent. But circumstances make it likely that the worm in this instance was obtained in America. It is quite possible that the remote Red River settlement may be productive of the cestoid without this having previously attracted attention. The patient told me that his food consisted a good deal of fresh-water fish, which, owing to rapid marches, was sometimes insufficiently cooked. Now, Cobbold and Leuckhart are of opinion that the Bothriocephalus larvæ are contained in fresh-water fish, and that these larvæ, when swallowed by a suitable host, become developed into sexual worms. The presumption is strong, therefore, that the patient became affected with the worm during his service in North America.

In this connection a specimen of what may be called false tape-worm may have some interest. It is a thin whitish substance, about an inch and a half long by three quarters of an inch wide, which was passed per anum and brought to me as a portion of tape-worm. It was proved by means of the microscope to be a piece of the fibrous coat of an artery by the presence of yellow elastic fibres. The late Mr. Quekett showed that a substance of this kind, procured in the same manner, was a portion of the aorta of a sheep which is often attached to mutton chops, along with which it is swallowed.

May 5th, 1874.

5. *Brain, heart, and trachea, showing absence of thyroid gland in a cretin.*

By Fletcher Beach.

Edith Jane C—, aged 2 years and 4 months, was admitted into the Hospital for Sick Children, Great Ormond Street, on November 15th, 1872, under the care of Mr. Smith, to whose kindness I am indebted for the use of the notes and photographs of the case.

There was no history of syphilis on either the father's or mother's side and no history of drunkenness on the part of the father, who had been in the army, but had retired with a pension. No family history of malformations. No history of instruments during labour. The house in which the child lived, which was at Dover, was said to be airy.

From her birth the child had kept her mouth open and her tongue on the verge, or hanging out of it. She never could suck well. (The mother brought the child to the hospital under the impression that the child's tongue was too large, and that something might be done for it.)

Nothing further was noticed until the child was twelve months old, when the mother found that the child ceased growing, and since then neither her body nor extremities had grown any longer. She had had no fits during teething.

The mother was an intelligent, well-formed woman, of about the middle height. She had had two children; this was the elder, the younger being perfectly healthy. She stated that the water, which both herself and the child drank, was very chalky, so much so that a deposit of lime often remained at the bottom of the glass after drinking. That in the cistern was often thick from the same cause.

On admission the following was the child's condition:—The child was 22½ inches in height, fairly nourished, not emaciated nor stout.

The head was large, flattened at the top, spread out at the sides; the sutures were well united; the anterior fontanelle was widely open.

The countenance was vacant and void of expression. The

complexion was sallow, but there was some blueness on the forehead and about the nose and mouth. The former was pug-shaped, the bridge flattened. The latter was half open, the tongue protruding. The lips were thick.

The arch of the palate was flattened; there were two central incisors in the lower jaw, the two upper ones pressed tightly upon the gum. There was no goitre, but the neck was thick and there were two swellings, soft and flabby, the size of pigeons' eggs, one on each side of the neck, situated below the ear and above the clavicle. The ribs were not beaded, and the chest was not pigeon-shaped. The forearms and tibiæ were curved, and the legs were short and curved.

The skin on the chest was rough, but nearly natural in colour; that on the arms and legs was loose, easily separable from the muscles, coarse and dry, not particularly dark in colour. The feet were blue and cold.

The abdomen was distended, measuring 19½ inches at the umbilicus, more distended after food, as she bolted all solids. Her bowels were regular, the motions being rather pale. Urine was passed in bed.

She lay all day in bed, crying almost constantly, except when she was fed or noticed. Her voice was hoarse. She was extremely weak and had no idea of supporting herself, and when held in the nurse's lap she lay with her head thrown back, her neck appearing very limp. On examining the heart a loud blowing murmur was heard at the apex, which seemed to become less distinct towards the base.

She was discharged November 25th, 1872, and readmitted August 5th, 1873, dying next day of exhaustion, having had severe diarrhœa for five weeks.

On readmission she was much emaciated, and the pigeon-egg sized and shaped swellings were not perceptible, there being simply fulness on both sides of the neck.

At the autopsy there was no thyroid gland, and neither were there collections of fat or other swellings on either side of the neck.

The heart weighed one and a half ounce. The foramen ovale was open, the aortic and pulmonary semilunar valves were thickened and of a dull red colour; there was a nodule of thickening on the tricuspid valve.

The brain weighed twenty and a half ounces. It was anæmic. There was some turbid serum in the subarachnoid tissue. The lobes were loosely united superiorly by thin fibrous tissue. There was no fluid in the ventricles and no softening of any portion of the brain.

The cranium was thin.

Remarks.—On looking over the records of *post-mortems* in the *post-mortem* book at the Children's Hospital I found that the average weight of brains of children of this age was thirty ounces, the lowest being twenty-seven and three quarters. This child's brain was therefore nearly ten ounces below the average and more than seven ounces below the lowest weight.

The absence of collections of fat *post mortem*, corresponding with the fact that the pigeon-shaped swellings were not noticeable when the child was *readmitted*, I think may be due to the drain the child had undergone (as shown by her emaciation and exhaustion) from the prolonged severe diarrhœa. As in two cases brought by Mr. Curling before the Medical and Chirurgical Society in 1850, the swellings were found to be due to collections of fat *without investing envelope*, there would, I think, be no great obstacle to their absorption.

In a paper on "Sporadic Cretinism as it occurs in England," read by Dr. Hilton Fagge before the Medical and Chirurgical Society in 1871, descriptions and lithographic illustrations were given of several cases he had seen in which there is no goitre, no thyroid gland, but supra-clavicular swellings. The photographs I exhibit are very similar to his first case.

Dr. Langdon Down has also brought a case before this Society. Cases of this kind in which *post-mortems* have been made I thought might be, however, sufficiently rare to justify my bringing this one before the Society.

Whether the excess of lime in the water, which is said to be one of the causes of cretinism, had anything to do with the production of this case, I will leave to the decision of the members of the Society, but other causes, as vitiated atmosphere, bad ventilation, want of sunlight, and insufficient food, were certainly absent in this case.

May 5th, 1874.

6. *Fatty tumours from the posterior triangles of the neck, and a goitrous thyroid body, from a case of sporadic cretinism.*

By C. Hilton Fagge, M.D.

On November 23rd, 1872, Dr. Grabham, of the Asylum for Idiots at Earlswood, was so kind as to inform me that there was an opportunity of making an autopsy in a case of sporadic cretinism, which had just proved fatal in that institution. He invited me to be present at the inspection, which was carried out on the next day.

The following report of the appearances found is taken from notes which I made immediately afterwards.

The calvaria was removed with some difficulty, owing to the firm adhesion of the dura mater along the line of the frontal suture and at the anterior fontanelle, which was still slightly open. The bone was thin and devoid of diploe, exactly like that of an infant. The line of the coronal suture was very evident; that of the lamboidal suture much less so.

When the brain was removed the form of the base of the skull was found to differ greatly from the normal. This appeared to depend mainly on an elevation of the foramen magnum and the basilar process. Thus, the margin of the foramen was surrounded by an elevated rim, and the cerebellar fossæ of the occipital bone were exceedingly shallow. The surface of the basilar process of the occipital and that of the corresponding part of the sphenoid bones, were much less sloped and more horizontal than natural; but the posterior clinoid processes were, nevertheless, at a much higher level than the anterior. The sella turcica was exceedingly dwarfed in the antero-posterior diameter (the anterior clinoid processes being much nearer to the posterior than usual). In front of the anterior clinoid processes the base of the skull had its natural form; the cribriform plate of the ethmoid being, however, on a much lower plane than usual in relation to the basilar process (as is apparent from the description already given.

The suture between the sphenoid and the frontal and ethmoid bones was indicated by an opaque white line; the line of union of the

DESCRIPTION OF PLATE XII.

Plate XII illustrates Dr. Hilton Fagge's paper on Sporadic Cretinism. (Page 268.)

FIG. 1. Is from a portrait of Walter H—, æt. 18 years, height 3 feet 6 inches.

2. Is from a portrait of Charles H—, æt. 16½ years, height 2 feet 10½ inches. The fatty tumours above the clavicles have reached an extraordinary size in this case.

3. Is from a portrait of Beatrice H—, æt. 9 years, height 2 feet 8 inches.

4. Shows the parts removed from the neck of A. B—.

In the centre of the figure the larynx and trachea are shown, and also the base of the tongue and the mylo-hyoid and digastric muscles. Beyond them, on either side, are the two lobes of the thyroid body, of which the right is enlarged, forming an oval tumour, covered by the corresponding omo-hyoid muscle. Outside these, again, are portions of the two sterno-cleido-mastoid muscles, and (at the extreme borders of the figure) the fatty tumours.

Fig. 1

Fig. 2

Fig. 3.

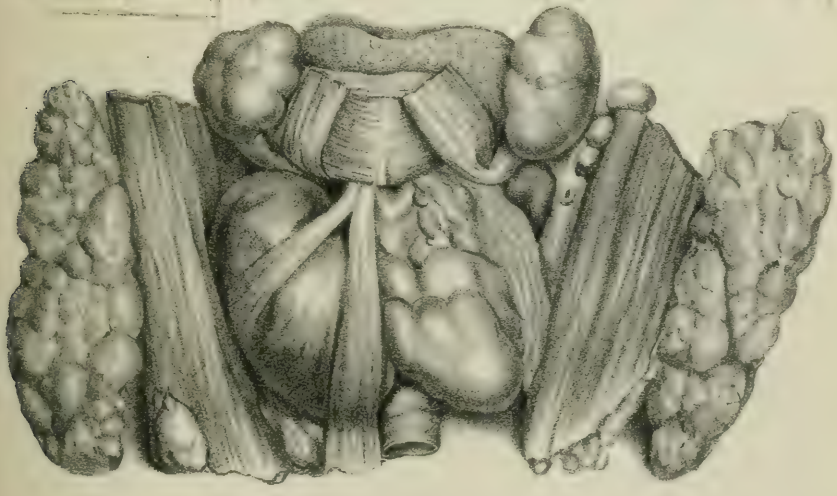

Fig. 4.

sphenoid and the occipital was no longer to be traced; but the bone there was very thin, being readily penetrated by the knife.

The brain was next examined, and it was found that the cerebellum was by no means so small as might have been expected from the extreme shallowness of the fossæ for it in the occipital bone; apparently the tentorium had been more arched than usual, so as to afford room for it. The posterior lobes of the cerebrum projected backwards somewhat beyond the cerebellum.

The convolutions seemed natural; the brain was firm and of normal appearance. The ventricles were of natural size, or perhaps slightly dilated, and the veins on their surface rather large, but they contained very little fluid. In the choroid plexuses there were some sandy grains. The septum lucidum was perfect.

The cervical vertebræ were much arched forwards. The entrance of the chest was very small. The chest itself was small; the rib-cartilages were not beaded.

The larynx and trachea were quite infantile, and so were the lungs.

In front of the trachea lay a thyroid body of some size. In the upper part of its right lobe was a rounded tumour the size of a walnut, lying deeply beneath the sterno-thyroid muscle.

The tumours outside the sterno-mastoid muscle were next examined. They were found to be soft, well-defined masses, looking like fat, but distinctly differing in colour from the subcutaneous fat in their neighbourhood. For whereas the fat generally was of a suety whitish-yellow character, these tumours were more of a pinkish hue.

On the left side the swelling overlapped the clavicle; on the right side it did not appear to do so, but on the right side there was an accessory mass the size of an almond, projecting forwards between two distinct portions of the sterno-mastoid muscle.

Below the clavicles on each side there were somewhat similar masses lying beneath the pectoralis major, between it and the pectoralis minor. These, however, differed less decidedly in appearance from the subcutaneous fat. On the right side the mass in question sent a smooth well-defined process forwards between the fasciculi of the pectoralis major. They did not on either side penetrate into the axilla proper.

The heart appeared quite healthy, except that it was very small.

The abdomen was much distended. The stomach and intestines

were large, and there was also a great quantity of fat in the omentum and elsewhere.

The liver appeared quite healthy. The spleen also was quite healthy.

The kidneys contained some cysts, but otherwise appeared healthy.

The left supra-renal capsule looked large in proportion to the kidney, but its structure seemed healthy.

The genital organs were quite undeveloped; there was no pubic hair. The prepuce was very long; the testes were small, scarcely bigger than those of an infant at birth, but their structure was healthy.

The specimen submitted to the Society consisted of the larynx, the trachea, the thyroid body, the portions of the sterno-mastoid muscles, and the fatty tumours from this case. A drawing of them was also shown, which forms fig. 4 of Pl. XII.

Remarks.—The patient from whom this preparation was taken formed one of four cases of sporadic cretinism which I related in a paper on the subject published in vol. liv of the 'Medico-Chirurgical Transactions.' The following brief report was all that I was able to give of the case:

"A. B—, æt. 20, has been in an idiot asylum ten years. His height when he was admitted was 2 feet 4 inches; it is now 2 feet $7\frac{3}{4}$ inches. His weight, with his clothes on, was 1 stone $9\frac{3}{4}$ pounds; it is now 2 stone 5 pounds.

"He is affectionate, placid, and quiet. He sleeps well. He has not the power of speech. His senses are natural. He can walk only by clinging to the furniture.

"His countenance is pallid, and his features are cretin-like in an extreme degree.* There is no goitre, and no indication of any thyroid body can be felt in front of the trachea. Swellings above the clavicles are present, but not of any great size. He is constantly dirty and wet, and makes no signs as to his wants. The skin of his hands and legs looks as if too large for him.

"A sister is said to be affected in the same way as he is."

In the report of the *post-mortem* examination, which I have given above, it will be observed that in one very important respect the appearances found differed from those which I had anticipated. Instead of the thyroid body being absent, it was of some size, and

* A portrait of the patient, copied from a photograph, was published with the paper.

in its right lobe there was a tumour the size of a walnut. Dr. Grabham informed me that he had been aware of the fact that a small goitrous swelling existed for some months previously.

As the result of the autopsy thus failed to confirm in one respect the statements made in my paper on the subject, I had been intending to bring the matter again before the Royal Medical and Chirurgical Society at some future time, when I should have accumulated some further observations on the subject. But having seen in the medical journals that Mr. Fletcher Beach exhibited a specimen taken from a case of sporadic cretinism before the Pathological Society (p. 265), I determined to delay no longer, but to show my preparation at once.

There are several points of interest in the case. In the first place, as regards the relation between the disease which I have designated sporadic cretinism and the endemic cretinism of Savoy and other mountainous countries, it has long been known that in the last-mentioned disease the base of the skull deviates remarkably from its normal characters. According to Virchow,* Malacarne examined the skulls of three cretins; and both Fodéré (1792) and Ackermann (1790) gave some account of the appearances presented by them. Besides an extraordinary narrowness of the foramina lacera, those observers (says Virchow) mention expressly the horizontal position of the basilar process (Grundbein), which is said to have been situated on a level with the body of the sphenoid bone. Nièpce, again, in reporting five autopsies, mentioned the horizontal state of the basilar process three times; and Iphofen devoted a chapter of his work to the question whether this abnormality could be the cause of cretinism.

Virchow's own observations, in a case of a cretinous infant, in which he himself made the inspection, differ in their details, although they confirm the fact that the base of the skull commonly deviates from the normal. In the case in question Virchow says (op. cit., p. 978), "the anterior fossæ were small, the middle very wide; the posterior rather wide, the whole cavity of the skull was very high, the *clivus* steep, the sella turcica narrow and small, the ethmoid bone flat but not depressed, the crista galli rather high." The *clivus* is the inclined plane which is formed by the union of the basilar process of the occipital bone with the sphenoid, and which reaches

* 'Gesammelte Abhandlungen,' p. 971.

to the posterior clinoid processes.) A little further on, Virchow adds, "The very steep clivus thus made with the upper surfaces of the sphenoid and ethmoid bones almost a right angle."

It will be observed that the appearances found in my case corresponded, not with those described by Virchow, but with the observations of the older writers referred to above. The discrepancy perhaps depends upon the ages at which the different autopsies were made. Virchow himself has pointed out and laid stress upon the fact that the relation of the occipital to the sphenoid bone undergoes a gradual alteration in the course of growth, and that as this occurs the clivus slowly assumes a more inclined position instead of the comparatively vertical one which it has in the fœtus.

As regards the well-known theory, supported by Virchow, that the primary defect in cretinism is a premature synostosis of the two parts of the sphenoid bone together and with the basilar process, my case could not be expected to yield any information, as the body was that of an adult in point of years, although so greatly retarded in development.

No point in my case is of greater interest than the fact that a goitre existed, instead of the thyroid having been absent, as in Mr. Curling's cases. In reference to this I may mention that one of the cases of cretinism which I have recently seen occurred in a boy whose sister had goitre. He came from the village of Halden, in Kent. His sister, a grown-up young woman, told me that there had been no other instance of enlargement of the thyroid body in her family, either on the father's or on the mother's side, but that there were a few other people with enlarged necks living in the neighbourhood. It thus appears possible that her case was one of endemic goitre, and it is certainly interesting that her brother should have been a cretin. He was 11 years old; he was three feet two inches in height; and his weight was only 39¼ lb. His nose was flat and broad, his nostrils round, his face anæmic. In each posterior triangle of the neck a fatty tumour was just perceptible.

From what has been stated it appears that the existence of tumours in the posterior triangles of the neck is the only constant distinction between sporadic and endemic cretinism. So far as I have seen, these tumours are always present in the former affection, whereas they have never yet been observed in the latter. My case confirms Mr. Curling's observation that they consist simply of fat.

At the same meeting of the Pathological Society to which I exhibited the specimen on which the foregoing remarks are based, I also showed some photographs of three cretins, in one of whom these fatty tumours in the posterior triangles of the neck have attained a very remarkable size. These photographs have been reproduced, and form figs. 1, 2, 3, on Pl. XII. The three individuals from whom the photographs were taken are members of a family of twelve. Their parents, who have always lived in London, were in no way related before marriage; they have been strictly temperate in their habits; and I am assured that none of their children could have been begotten under the influence of alcoholic stimulants. Some others of the offspring are alive; they are all well, and one of them has rowed in an Oxford and Cambridge boat race. The mother had rheumatic fever when eighteen years old. I have never seen her, but am informed that she has a mitral systolic murmur, and also that "her neck seems full in front."

Of the three cretinous children the eldest, Walter (Pl. XII, fig. 1), was born in May, 1855. He was a fine baby, remarkably quiet and sweet-tempered; he slept a great deal; he did not cut any teeth until he was nearly three years old. When he was about six months old his mother noticed that his skin was rough, very unlike that of an infant. (This roughness of the skin has been present in other cases that I have seen.) He was always confined in his bowels.

His height is now three feet six inches. His head is large; his eyes are far apart; his teeth are very bad. His abdomen is very large and tumid, especially after meals. He can read and converse a little. His memory is pretty good. He walks very well.

A curious point in reference both to him and his brother is that his mother states that neither of them crept like other children in learning to walk; they "went upon their hands and feet."

In this case the swellings in the neck are comparatively small. It appears doubtful whether a thyroid body is present.

The next brother, Charles, was born in September, 1856. He was the largest of all his mother's children. He also slept a great deal, even for an infant. When about five months old he became very pale, and suffered from a sort of faintness. He cut no teeth until he was two years and two months old. He had the same kind of roughness of the skin as his brother.

He has never acquired the whole of his first set of teeth. Quite recently (spring of 1873) he has cut five permanent incisors.

His height is now 2 feet 10½ inches. His tongue is very large and flabby, rendering articulation difficult. He seems to know a good deal that is said to him. He can ask for what he wants; and his parents understand what he says. His disposition is most affectionate; but he is liable to gusts of passion, for which he shows the greatest regret. He is very happy and cheerful. No trace of a thyroid body can be felt in this case. The swellings in the sides of the neck are of remarkable size, as appears from the figure (Pl. XII, fig. 2).

The third case (Pl. XII, fig. 3) is that of a girl, Beatrice, born in September, 1863, prematurely. Unlike the boys, she was very restless and sleepless. When about eight months old she had a kind of faintness and was ill for some time. She was a very delicate, suffering baby. She cut her teeth better than the boys, but not rightly nor regularly.

Her height now is 2 feet 8 inches. She is much more sensible and bright looking than her brothers. Like them, she is moderate in her appetite, and cleanly in her habits and person. All of them are very fond of clean clothes. She knows her letters and can converse pretty freely. The swellings at the sides of her neck are rather prominent. The thyroid body is to be felt, especially on the right side of the trachea. *May 19th*, 1874.

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7. *Fibrinous exudation in Herpetic catarrh.*

By William Squire, M.D.

Dr. Squire exhibited a shred of false membrane expelled on the 17th of February last from the pharynx or trachea of a young lady, 20 years of age, suffering from herpetic catarrh. She caught cold in returning from a ball. Next day she had a rigor, followed by high fever and two sleepless nights from impeded deglutition and frequent cough. After this product was expelled the cough was less troublesome. The face and neck were very florid, and the fauces and palate red, so as to suggest a fear of scarlet fever, but there was

no fulness or enlargement of the cervical or submaxillary lymphatic glands. The temperature was 101°; the pulse frequent and throbbing; both these disturbances subsiding by night after a few doses of tincture of steel. Deglutition continued difficult, with pain referred to the left ear, and more fulness of the left tonsil, with small herpetic spots. Next day the temperature was 99°; and the attack ended with a copious crop of herpes labialis, most on the left side and extending to the left nostril. A young child of two years old, and other members of the family, were in frequent communication with the patient without any of them suffering in the same way, though two of them had catarrh with coryza. This fragment of membrane is of interest as supplying the connecting link between a very common form of disease and the inflammatory croup of children. It measures three quarters of an inch in length, and from one quarter to one third of an inch in breadth; the upper or free surface can still be distinguished by its fibrillated texture, the lower by a flocculent appearance; small ecchymoses were originally noticeable on the under side. Other specimens of exudation like this had disintegrated so rapidly, while macerating in water with a little chloric ether added, that they seldom retained sufficient of their original structure for exhibition at the Society's meetings. Doubtless the greater extent and tenacity of this specimen, compared with others from younger subjects, is owing to the age and completed growth of the patient; it differs in no way from the false membrane of diphtheria; yet it is clearly a result of quite a different illness. To consider any condition capable of giving rise to fibrinous exudation as constituting diphtheria is to make that disease dependent on one accident of its course, and to raise a single, inconstant, and merely special character to generic importance, and to endanger the practical importance of recognising diphtheria as a general disease. On less evidence than is now brought forward cases have been called diphtheria where there was in reality neither cause for alarm nor any reason for isolation of the sick. *May 19th*, 1874.

XII. SPECIMENS FROM THE LOWER ANIMALS.

1. *Œsophageal obstruction in a cock.*

By Edwards Crisp, M.D.

This example occurred in my own poultry yard, the bird, a very large healthy specimen until about a fortnight since, when he became weak and tottering in his walk and refused his food. I found that his crop was very hard and enormously distended, the distension evidently depending upon some obstruction anterior to the gizzard. I removed the feathers, made an incision into the crop, and emptied its contents, washed out the cavity, closing the wound with sutures. The crop was again distended and opened, and this operation was repeated three times, the wound never healing perfectly, until at last the Indian corn and other food eaten passed out of the opening and was again swallowed repeatedly. The bird became more emaciated and was killed. As seen in the specimen before the Society, a piece of "pax wax," *ligamentum nuchæ*, about two and a half inches in length and an inch in width, was impacted in the œsophageal tube anterior to the *proventriculus*, the tough, unyielding nature of this substance forming a perfect obstacle to the passage of the food. A pair of dressing forceps passed into the tube would have effectually removed the extraneous body. I have not heard of a case of intestinal obstruction from this cause in the human subject, but now the use of Australian mutton is so common it is not unlikely that such accidents may occur. Many years since (1833) I was in attendance upon a patient who a short time before my arrival had had her hens (thirteen) poisoned with arsenic by a neighbour; they were all dead with the exception of one which was unable to stand, and appeared to be dying. I opened the crop, removed a large quantity of barley with particles of arsenic, washed the interior well with water, sewed up the wound, and the bird entirely recovered. More recently I

had a favourite cat poisoned by arsenic. I gave him chloroform, opened the stomach, which was inflamed in patches, washed it out, but the animal died in a few hours. I bring forward these cases because they have a slight bearing upon the effects of arsenical poisoning and also upon the operation of gastrotomy in the human subject. *November* 18*th*, 1873.

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2. *Traumatic aneurysm in the common fowl.*

By Edwards Crisp, M.D.

The subjoined case as well as the last named occurred in birds in my own poultry yard. A young Brahmah cock was killed for the table; he was in good condition, but had been seen sometimes to show signs of weakness by falling down. A tumour as large as an ordinary sized walnut was seated on the lower part of the gizzard; it was a dark colour and filled partly with layers of coagulated blood; the exterior covering was composed of yellow elastic tissue and of fibrous tissue. The point of a pin was seen projecting into the aneurysm; the pin, having been forced through the horny part of the gizzard, and wounding a branch of the anterior gastric artery, had produced the aneurysm described. It is not, I believe, very uncommon for the gizzard of birds to be perforated by pins and other pointed instruments. I have recently lost a valuable pigeon from the gizzard being perforated by a long slender French nail, which passed into the liver and produced fatal inflammation, but this is the first example, I believe, recorded of traumatic aneurysm in one of the feathered species. *November* 18*th*, 1873.

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3. *Specimens of the grouse disease.*

By W. Cayley, M.D., for Dr. Cobbold, F.R.S.

In reference to this subject Dr. Cobbold exhibited specimens of a new species of nematode worm discovered by himself in the cæca of the grouse. He had described and figured this parasite in the pages of the *Veterinarian* for March, 1873, and also in a separate publication on the *Grouse Disease*, in which he had given a full statement of the facts tending to prove the parasitic nature of the recent epidemics affecting these birds. Since these views had been made public several other investigators had taken up the subject, but, in the author's opinion, they had not disturbed the conclusions at which he had long previously and independently arrived. In support of these views, he further referred to the great variety of epidemic disorders amongst animals that were clearly due to the presence of entozoa. In the present case the entozoon chiefly concerned in the production of the grouse disorder was a species of strongle (*Strongylus pergracilis*, Cobbold), but the author had satisfied himself that tapeworms (*Tænia calva*, Baird) often contributed to bring about the fatal result. Since these facts were originally made public the author has been furnished with additional proofs of the destructiveness both of strongles and tapeworms amongst our domesticated animals; and he has recently recorded a parasitic epidemic in which a hundred ponies died from the invasions of entozoa. *January 20th*, 1874.

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4. *Fibro-cystic goitre in a dog.*

By Morell Mackenzie, M.D.

Jack, a retriever dog, æt. 8, had been rather wheezy for some years, but had otherwise enjoyed good health till about a year ago, when he first began to show signs of fatigue on slight exertion.

At the beginning of February, 1873, when the nights were severe,

he took cold, and on the 6th of that month it was noticed that he was no longer able to bark; at the same time he appeared to have great difficulty in swallowing. He sometimes tried to get down a piece of meat, but he was always obliged to throw it back again. On February 14th he was prostrate and lay moaning faintly, but later he became furious, foamed at the mouth like a mad dog, and endeavoured to bite people. The violent stage subsided in a day or two, and he gradually sank about a fortnight after the commencement of the attack.

On *post-mortem* examination a large fibro-cystic bronchocele was discovered. A sheep's knuckle-bone had become lodged at the orifice of the œsophagus, and there was a rather deep ulcer at the point of impaction. At one spot the ulcer at the lower part of the pharynx penetrated deeply, and communicated with the cavity of the cyst. The circumference of the ulcer and the mucous membrane at the lower part of the pharynx was of a dusky red colour, and slightly puckered. The lining membrane of the larynx and trachea was infiltrated and of bright red hue.

The goitre consisted of a cyst of the thyroid gland, and occupied the front and sides of the neck. It was ovoid in shape, 7 inches long, 4½ broad, and 3 deep. Its walls were rather more than one inch thick and were covered with fibrinous concretions. The cyst contained about three ounces of fluid of the well-known "coffee grounds" appearance.

Although the death of the dog was attributed by his master to cold, the history of the case, derived from *post-mortem* experience, would tend to show that for some time (probably for some years) the animal had suffered from cystic bronchocele. The tumour had gradually encroached on the œsophagus and trachea, and displaced them both. At last the œsophagus had become so narrow that a foreign body became impacted at its orifice. This gave rise to inflammation of the gullet and was followed by laryngitis. Death resulted from inanition (the foreign body preventing the passage of food), but was probably accelerated by the inflammation of the throat.

Bronchocele is a comparatively rare disease in dogs in this country, and even where bronchocele is endemic, as for instance in Derbyshire, it is very uncommon. The author has, however, met with many cases in Switzerland and Piedmont.

May 19th, 1874.

5. *Specimens of the disease in the South of Ireland amongst poultry.*

By Edwards Crisp, M.D.

I place before the Society two hens, one sent from Ireland, that died of this remarkable disease—a subjoined description of which, by Mr. Digby Wright, will show its deadly nature.

"Can nothing be done to stay the dreadful plague that is now raging in the South of Ireland amongst the poultry? They are dying off in hundreds without any apparent disease. They look, and are in fact, perfectly healthy up to the moment when they are attacked. They drop off their perches at night by dozens, dead, and all fat and healthy, in some cases too fat, I allow. I have hitherto, I am thankful to be able to state, enjoyed an immunity from this dreadful scourge; but amongst a lot I bought for exportation last week were some which, though looking healthy, had the germs of the disease in them. Within two days they all died, and then the mortality amongst my own fowls commenced. First, a fine Spanish cock and hen, which I brought from London only three weeks ago; then a gold-spangled Hambro' cock; then a silver-spangled do., both splendid birds; then three or four hens belonging to each, all within an hour or two of each other, and all previously in the highest state of health. Then my ducks began to go off in twos and threes—Aylesbury, Bremen, Muscovy, common ducks, indiscriminately; the symptoms, the same in all cases, generally beginning with a stupid look, a shutting of the eyes, and oscillatory movement of the body, with a decided refusal to eat, a severe thirst, preferring any dirty puddle to their proper drinking place, with a desire to run into dark corners, and remain there till discovered dead or dying; laboured respirations, ending in death in a few hours, sometimes in less than an hour. Two of my best hens died of it yesterday, directly after laying an egg each, remaining an unusually long time in the nest. I have just heard of a poor woman near here who lost her all (twenty-four) in the course of yesterday and the two previous days. After death their bodies are quite black; in fact, they frequently turn so before, but the intestines, liver, gizzard &c., are all perfectly

healthy. A few spots upon the heart and a small clot of blood are the only abnormal appearances about them upon making a *post-mortem* examination.

"Where this will end no one can say. I have thoroughly deodorised and whitewashed all my fowl-houses, and yet this morning a most valuable cock, a buff cochin, fell a victim. He struggled for eight or nine hours, but sank at last exhausted. I have still a great number of very valuable fowls left, all imported at great expense, and it is hard to think that I must lose them all, or kill them for the small amount their carcasses would fetch, compared to their price to me as stock birds.

"The cottiers and small farmers all around are selling off their stock of fowls as quickly as they can; but in general they cannot make up their minds to part with good laying hens for a merely nominal sum to the dealers until half of them have fallen victims. Will scientific men give us the benefit of their experience, and some information which will tend to stamp out this dreadful pestilence which has now been holding its course unchecked for some years?"

I am indebted to Mr. Lane, of Vernon Mount, Cork, for a fresh specimen before the Society, which I carefully examined. The bird was plump and in excellent condition, and had laid an egg an hour before her death. The depending parts of the body of a bluish colour, the vessels of the brain and spinal cord congested; the heart studded with small dark-coloured spots, as in many examples of cattle plague. A small transparent gelatinous deposit over the layer of fat at the base of the heart, which fat is generally present in birds. All the other viscera normal. I suspected from examinations that I had made of birds dying in the same way among my own poultry, and from other sources, that this disease was nearly allied to splenic apoplexy (so called) in the sheep, horse, and ox, which disease I was the first to describe in this country in my work on the spleen, 1852, p. 168. On placing the blood of this bird, and of several others that I have examined, under the microscope, I found numerious *bacteria* of a rounded form, and about one twentieth the size of human blood-corpuscles; they had a rotatory motion and this continued for many hours. In the sheep and ox I have generally seen the *bacteria* of an acicular form. A hen inoculated with the blood of the fresh fowl appeared dull and stupid for a day or two, but ultimately recovered, as did those fed upon the flesh. Whether these *bacteria* are the cause or effect I am unable to say, but it

is tolerably certain that this is a blood disease allied to "*charbon*," which occurs in the sheep and ox, often among animals that have been poorly fed, and have suddenly obtained an abundance of rich food.

May 19*th*, 1874.

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6. *Diphtheria-like membrane in dove-house pigeons.*

By Edwards Crisp, M.D.

The specimens before the Society are from pigeons that I kept alive for a short time, and I had a good opportunity of watching the disease. At first the bird is hot and feverish, mopes, and does not take its accustomed quantity of food.

On examining the palate a dense, thick, yellowish deposit is seen upon it and upon the under side of the lower beak; this gradually increases so as to interfere with deglutition, and the bird at length is unable to swallow, although it makes attempts to do so; it gradually becomes weaker, and dies apparently from inanition. There is likewise a discharge of mucus from the nostrils, and the head of the bird is elevated so as to enable it better to obtain air. This rupia-like cheesy deposit under the microscope is seen to consist chiefly of epithelial scales, and their *débris* with amorphous cells. It is confined entirely to the beak and posterior part of the palate, does not extend into the trachea; indeed, the various organs of the body appear to be in a normal state. The blood does not contain *bacteria*, but the white corpuscles are more abundant. It is questionable whether the disease is contagious; other pigeons with those affected escaped the lesion?

In the thirteenth volume of our 'Transactions' Dr. Bristowe has recorded a similar disease which occurred in thirty uncaged doves.

May 19*th*, 1874.

7. *Grouse disease.*

By Edwards Crisp, M.D.

I place these specimens of the so-called grouse disease, as well as the parasites that are supposed by some to produce it, before the Society, because there is as yet much to be learnt about its nature and cause. The specimen is a grouse shot in August last; it is very thin, weighing only 11 oz. As is well known, on many moors in Scotland the grouse were nearly exterminated last year; many "shootings" had to be abandoned.

In 1866 and 1867 I had many opportunities of studying this disease, and I came to the conclusion that tapeworms in the intestines were not the sole cause of the mortality. In 1873 Dr. Cobbold first made known in the 'Field' newspaper the presence of a large number of minute strongyles in the cæcal appendages of the diseased grouse, which he named *Strongylus pergracilis*. He came to the conclusion that the mortality arose from this cause, and in a pamphlet recently published he reiterates this opinion, "that the present grouse murrain is due to parasites." In August, 1873, according to the report of Mr. Vaugham, of the Edinburgh Veterinary College, in several diseased grouse sent there for examination, round worms visible to the naked eye were found in the pectoral muscles, brain, and in the large intestines, but especially in the cæca. I have examined a large number of grouse, healthy and diseased, and I have never seen such worms as those described by Mr. Vaugham. Before I speak of this disease let me notice a peculiarity in this bird, and the same remark applies to a great extent to all the *Tetraonidæ*, viz. the enormous length of the cæcal appendages. As is well known, in some passerine birds, and in some of the *Accipitres*, the cæca are scarcely visible; in the grouse they are of greater length than the rest of the intestinal canal, measuring (from mouth to anus) ten feet, the appendages being sixty-six inches, twelve inches longer than the rest of the tube. Besides the extreme length of the cæca, they contain seven longitudinal folds, so as greatly to extend the superficies of the absorbing surface, a fact of great importance when taking into account the pathology of this disease, and one I have not seen noticed by former

investigators. These tubes, when the bird is in a healthy state, contain a soft, brown, pultaceous matter. I have never seen any hard or indigested particles in this pulp. The food of the grouse chiefly consists of the leaves and flowers of the heather, for the trituration of which the bird swallows a large number of white stones nearly of uniform size. The berries and leaves of the *arbutus* I have also found in great abundance in the crop and gizzard; some have attributed the mortality to the presence of this plant, and a great number of other causes have been assigned by various writers; amongst these, overstocking, the presence of sheep, diseased heather, new or old heather, wet seasons or great draught, atmospheric influence, and the presence of parasites, are amongst the most prominent. I have not heard of the fungoid theory, nor of the influence that hares and rabbits may exercise in its production.

For the investigation of this disease during the late epidemic I have written to several proprietors of moors where the fatality has been great, forwarding certain questions. Diseased grouse, some found dead, and others shot, have been sent to me, and I have, moreover, obtained from a poulterer in Leadenhall Market the viscera of forty-eight grouse that were shot in good condition, so that I could compare these with the viscera of the diseased birds.

The subjoined is the summary. During the epidemic of 1866, 1867, I found a large number of tapeworms (the *Tænia calva* of Baird) in the intestines of nearly all the healthy birds, as well as in those diseased; the latter were thin, the livers were all dark coloured and softened, as were the spleen, villi, &c.; the epithelial lining of the intestinal canal readily detached; the kidneys soft, pancreas small. Some of the blood-corpuscles were irregular in shape, and the nuclei indistinct.

The appendices in their natural state are very thin, but in a few instances I have found them much thickened by a cheesy deposit, and in these examples a vast number of strongyles have been present.

Of six birds examined last year, 1873, which died of this epidemic disease, all had strongyles in the cæca, and all had tapeworms in larger or smaller quantities in the small intestines. All were more or less emaciated, and all had the appearance of the viscera described. In the viscera of twelve healthy birds obtained from Leadenhall Market in August last seven contained tapeworms; the appendages were not examined for strongyles.

In sixteen apparently healthy birds, August 30th, 1873, only two were free from tapeworms and strongyles. In three the intestines were blocked up to the extent of several inches with tapeworms, and nearly all had strongyles in the cæca.

In eleven birds in good condition, examined September 4th, two had no strongyles. All had tapeworms in greater or less abundance. In six, examined September 20th, all had tapeworms, and four had strongyles.

Besides these a large number was examined, but no accurate notes were taken, the general conclusion being that few were exempt in parasites. The tapeworms varied in number from one to a hundred, the strongyles amounted to many thousands.

As regards the strongyles, which are supposed to play an important part in the production of the disease, it is a curious fact that, although these strongyles are so abundant in the cæca of the grouse, they have never been found in any other birds, although it is possible that their minuteness may to some extent account for this. I have, however, looked for them in several other members of the gallinaceous family, and, with one exception,* have failed to discover them. Deising, in his 'Systema Helminthum,' 1851, out of 507 species of birds, names various species of entozoa inhabiting each; but he quotes only four species of strongyles (excepting the tracheal worm, *Syngamus trachealis*)—one, the *Strongylus lari*, found in many species of gull; *Strongylus nodularis* in several species of geese, the *Strongylus tardæ* in a bustard, and the *Strongylus buteonis* in a red falcon. None of these were in the cœcal appendages. I have found ascarides visible to the naked eye in many of the gallinaceous birds, British and foreign, but the minute strongyles, if present, may have escaped observation.

As Drs. Baird and Cobbold have described the two worms I have named, I need only mention their *general characters*. The tapeworm (*Tænia calva*) varies in length from three to twelve inches, rarely attaining the last-named length; the joints I have counted number from 200 to 600. The head and neck are very small, the former furnished with numerous hooks around the mouth, and, according to Baird, the head is furnished with *four* suckers?

The *Strongylus pergracilis*, Cobbold, is a very minute thread-like worm, of a white colour, visible to the naked eye, varying in length from six to eight lines, and about the thickness of a fine ink stroke

* Willow grouse, *T. salaceti*.

with a pen. The male, as in most of the strongyles, is a little smaller than the female, and furnished with a rounded tail, which I have rarely seen bilobed as described by Dr. Cobbold. The tail consists of a very delicate membrane, which encloses ten digitations, and above these is a double penis of a reddish-brown colour, one of the spicula of which is often seen extruded. The oviducts of the female generally contain a single file of ova, more or less of a dark colour; in some specimens the granular matter is seen arranging itself into the future worm.

The tænia vary in number from two or three to a hundred, the upper part of the alimentary tube to the extent of four or five inches being blocked up with them even in birds in good condition. The strongyles, confined entirely to the appendices, as far as my investigations have gone, are excessively numerous, a small portion of pulpy matter often containing eight or ten of them. These parasites, as I have said before, are sometimes present in great abundance in birds apparently healthy. In a future communication I hope to place before the Society the result of experiments that I am instituting respecting the origin of this disease. According to the present state of my investigations I venture to draw the subjoined conclusion:

That, looking to the great abundance of entozoa in various animals, as in hares, rabbits, seals, porpoises, sunfish, salmon, trout, and many others, and looking also to the abundance of tapeworms and strongyles in grouse apparently in perfect health and in good condition, it is more than probable that there is another deleterious cause in operation (fungoid or otherwise) with which we are not at present acquainted, and that before we can come to accurate conclusions more methodical, scientific, and comprehensive investigations must be made.

A new method of preserving the cestoid worms.—The worm, when fresh, is placed upon glass and allowed partly to dry, another piece of glass of the same size is placed over it, and when the worm is perfectly dry the sides of the glass are cemented together so as to exclude air. The specimens of grouse tapeworm before the Society have been prepared in this manner. *May 19th*, 1874.

XIII. DISCUSSION ON CANCER.

March 7th, 1874.

Sir W. JENNER, President, in the Chair.

Mr. De Morgan opened a Discussion on Cancer. He said,—It was with a feeling of great reluctance that when I first received the invitation which you, sir, and the Council of the Society did me the honour to make, I undertook to open a discussion on cancer. I now regret that I did not leave this work to other hands, for on reviewing the subject I find that I can do little more than repeat opinions and arguments and surmises which are already familiar enough to members of this Society. It would, I think, have been better had the opening of the discussion been entrusted to some one out of the many who have been occupying new ground in their investigations on cancer.

The feeling, too, presses on me that in all that relates to the nature and cause of cancer we want sufficient and accurate data on which to base our arguments. Experiment fails us, and we know nothing of the disease in its earliest stages. Again, I felt, and feel, the difficulty of condensing within a reasonable compass the questions which I would submit to your consideration.

It is, however, a matter of satisfaction to me that, imperfectly as I may perform my task, the Society will have the benefit of a discussion on the subject of cancer by others who have given deep attention to it.

But the subject of cancer is a wide one, far too wide to be embraced within the limits I would assign to myself, and I propose to confine myself to the question—a sufficiently wide one in itself—what are the relations of cancer to the organism, whether in its natural or its morbid condition? Interesting, then, as is the search into the histological characters of cancer and their likeness or un-

likeness to those found in other tumours, I propose to exclude this part of the subject. Nor do I know that for our present purpose it signifies whether cancer be a development of epithelium or of connective tissue? It is of more consequence to determine the points of contact and divergence between cancer and other tumours in respect to their behaviour as living growths, and what between these generally and the normal structures of the body.

Nor do I propose to touch at all on the subject of the treatment of cancer. This would lead far beyond those limits which must be imposed on our discussion.

I may state also that I have omitted all reference to names. I give my own notions or those I have adopted from others; but I do not wish to make myself appear as tilting against observers whose opinions are more entitled to respect, perhaps, than my own.

It will be well, before considering the nature of the disease, to define what I mean by cancer. I should say that it is a malignant growth consisting of a delicate fibroid stroma, containing within its meshes aggregated but not coherent cell elements—cells, nuclei or granules—generally ununiform, though often similar to natural cell elements. By malignant I mean that which tends to continued spread and multiplication—irrespective of the tissue invaded—to progressive ulceration and ultimate poisoning and exhaustion of the system. These definitions are imperfect; cancer is not of necessity malignant, for it will sometimes retrograde, without showing any of the signs which we attach to malignancy. On the other hand, tumours which we usually consider innocent show sometimes the characters of malignancy. Under no circumstances would I limit the term malignant to cancer. Sarcoma, myxoma, and other forms of tumour are often as malignant as cancer, in some forms, perhaps, more so.

Between cancer and other forms of tumour the main, or one main difference is, that its component cells are free, and that they do not present a uniform type. Practically, I may observe that I agree with those who would regard any infecting growth as a cancer, and I surely believe that whatever argument applies to the subject of the origin of cancer, applies equally to that regarding the origin of any infecting tumour, perhaps of any true tumour, be its nature what it may. But I believe also that the structural peculiarity of cancer is a main factor in that destructiveness which so specially characterises it, and in the present argument I would limit

the term cancer to those forms of disease which are specialised as medullary cancer, scirrhus, epithelioma, and rodent cancer. I cannot see reason for dissociating epithelioma from cancer.

Let me say, too, that when I speak of the origin of cancer I speak only of its place of origin, whether in tissue, or blood, or elsewhere, not of the conditions which determine its special form of development. These conditions we may be prepared to reason on when we have found out why one atom in the germinal membrane becomes muscle, another bone, another brain. I cannot help thinking that whatever determines the special forms of development of natural structure is in operation in the development of what we call morbid growths.

The views which have been entertained as to the origin of cancer are various; we may, I think, embrace them under the following heads:

1. That a cancer tumour is the expression of a specific blood condition; standing in the relation to this blood condition of a secretion to its gland.

2. That a morbid material is present in the blood, which coming into relation with an appropriate tissue enters into combination with and causes the growth of the tumour.

3. That the disease has its origin in the constitution at large, the tumour being only the local manifestation.

4. That the disease is in its origin purely local.

5. That though local in development there are general or constitutional conditions favouring its occurrence.

Of these, the three first may be regarded as the prevalent opinions of surgeons.

As I shall have to use the term constitutional as distinguished from local, it will be well to define my meaning; but this it is not easy to do clearly. The constitution is the man, all that gives him his individuality. In that sense, what we should in ordinary language call a purely local affection is really constitutional, a common lipoma, for example. But that is not the sense in which the term is ordinarily used in this connection; what is meant is an all-pervading condition, which will sooner or later find its local expression in altered nutrition, in new growth, &c., which will in their turn be evidences of the constitutional state. All would admit a practical difference between clubbed fingers and fatty tumours.

I have omitted "parasitism" from my list of assigned causation,

as I suppose no one would now maintain that the cancer elements are in the first instance altogether alien to the body, as they should be to justify the use of the term. That in its progress malignant disease resembles parasitic growth may be fully admitted.

There are strong grounds for regarding cancer as something more than a local disease. The all but certainty of its recurrence, remove it as we will, its heritability, its frequent association with other forms of irregular growth, its often rapid diffusion, its power of infecting the system—all in fact that we see in the life of cancer—naturally lead to a belief that the disease must from the first be more than a mere local tissue change. And in one sense, and to a certain extent, I must admit that this belief is well founded.

I have mentioned hereditariness as one of the grounds for regarding cancer as not a mere local disease. I believe that cancer is more frequently inherited than is generally admitted. We find the proofs of inheritance quite often enough to allow us to reckon this as one of its factors. In a large number of cases, moreover, in which no proof can be found of the existence of the disease in a progenitor, we can trace it in collaterals, and it seems to me reasonable to conclude that in such instances, though the common parent may not have lived long enough to develop the disease, it was present potentially. Nor is it contrary to reason to conclude that the constitutional disposition, whatever that may be, is often present without the disease becoming developed. This must be the case where a disease or peculiarity has skipped one or more generations. The peculiarity of the grandfather may reappear in the grandson, though the father may not show it; yet the father must have a something in him which he can transmit, though it never is seen in himself.

I may pass now to the consideration of the view which I would maintain, that, though local in its origin, there is in some, possibly in all, cases a predisposition to the disease, which may, possibly, be distributed through the system, but which much more probably has its seat in some one among the tissues of the body. I would question therefore the evidence of there being any special disease in the blood, which either alone produces cancer, or co-operates with tissue specially fitted for the development of the disease.

Let me mention here that I doubt the existence of cases of simultaneous outbreaks of primary cancer. Now and then, but rarely, more than one primary cancer may form, and that at different periods of time.

Before giving my reasons for attributing a local origin to cancer, it may be well to state the difficulties which lie in the way of my reception of the blood hypothesis.

These are—1. That all the facts in the history of a cancer can be explained without resorting to it. 2. That there are some facts which militate against it. 3. That if we receive it, we must admit either that the same blood poison aids in the formation of simple tumours or that each tumour has its own special poision.

I will take first the facts which appear to me to militate against the blood hypothesis, and I now speak of the blood as a whole; I shall presently refer to the possible influence of the white blood-corpuscles.

Now, supposing that the blood were a poison-holding fluid, we should expect, inasmuch as the poison must be present before the tumour which it aids in producing appears, that there would be some previous indication of such diseased blood state. But if there be one thing more noticeable than another in the early history of the majority of cases of cancer, it is the wonderful health enjoyed by its victims. Is it not the common story "I did not think there could be anything in the lump because I was feeling so particularly well?" Generally our patients have the build which would point to long life, and come of long-lived families. This is by no means an invariable rule; many cancer patients are and always have been delicate, and come of consumptive families, but they do not become more delicate, indeed, they often improve in health before the cancer is discovered.

We should expect an opposite condition were the blood the seat of disease.

Again, a growing cancer is removed and the disease may never return, the patient remaining in perfectly good health. What are we to assume here if we adopt the doctrine of blood disease? Is it that though the cancer was growing the removal took place at the moment when the blood poison had all been eliminated? Or that the poison remained in the blood, but that the only tissue in a fit state to co-operate with it in the formation of cancer had been removed, and hence no fresh cancer matter appeared? Either solution is difficult of acceptance. It is difficult to understand that though the blood must at first be in a diseased state, yet that a cancer when it has formed may grow and spread though the blood has returned to its natural healthy condition. On the other hand, it is

difficult to understand that a patient may remain free from local disease altogether, though the essence of the disease remain in the blood. The cases are rare in which cancer has been removed once and for ever by operation, but those in which it has remained undeveloped for years after operation are by no means uncommon, and the same remarks apply equally to them.

There is nothing which seems to contra-indicate the presence of a blood poison in cancer more than the well-known fact that the disease after operation rarely returns in any of the ordinary seats of election. Scirrhus of the breast, for example, while it returns constantly in the skin, in the connective tissue, in the lymphatic glands, and in muscle, seldom returns in the opposite breast. This is as true of cases in which there has been a long immunity after operation as of those in which the disease returns rapidly. Were the disease seated in the blood should we not probably find recurrence in those organs which we recognise as the ordinary seats of primary cancer? The same remark applies to medullary cancer of the testicle to epithelioma of the lip or tongue, and to disease of symmetrical parts generally. Surely as more than half of all external cancers are seated in the breast we should expect to find the second breast more frequently the seat of disease, if the blood condition were a determining cause.

Another objection is that while cancer is growing and infecting the neighbouring tissue or even causing the cancerous cachexia, injuries inflicted on other parts of the body may, indeed usually do, run their ordinary course; wounds will heal and repair go on just as though the blood were in the purest condition. It may be said that the cancer poison is being eliminated by the tumour, but new growths will spring up elsewhere while healthy action is going on in the wound.

While, then, some of those characters which are usually present in blood diseases are wanting in cancer, we do not meet in the latter with any which specially distinguish blood disease. I propose further on to endeavour to show that whatever there may be in common between cancer and blood diseases will be found between these and most forms of tumour.

The reasons which make us hesitate to receive the hypothesis of the blood as a circulatng fluid being the seat of a poison may be brought against the view that the poison resides in its solid elements, the white corpuscles, or that they have any special influence in determining the growth of cancer.

Whether the white corpuscles form or take part in the formation of the cell structure of cancer is a point on which I shall not enter. We know that they pass out freely into the tissues, and that they probably perform some important function in nutrition. But it is difficult to conceive that each white blood-cell has a special property which fits it for doing some special work,—that one belongs to muscle, another to brain, another to cancer tumour. Yet, on the supposition that the white cells possess peculiar properties in reference to cancer, we must either admit this, or we must conclude that every cell is a conveyer of cancer influence, a view more difficult of acceptance than that under which the poison is supposed to be distributed through the fluid blood.

Surely the simpler view is that each tissue, each active element of that tissue, has its own vital property, and that the blood, a common fluid, is distributed to all alike, each taking and appropriating what it wants. Of course it will be evident that impairment of the nutrient fluid will cause an unhealthy state of the tissue to be nourished, but is it not also the case that if the tissue be impaired the purest blood will fail to induce healthy nutrition?

What else is the meaning of the degeneration of muscle from disuse? The pure blood is brought to it, but it will not thrive. The same is seen in the vegetable kingdom; the branch of a healthy plant trained in the dark will be sickly, and aphides and parasitic growths will abound in it. The sap which rises freely and healthily to other parts of the plant is not taken up and utilised by the sickly branch. I cannot help here referring to those strange phenomena observed by Dr. Brown-Séquard in guinea-pigs with partially divided spinal cords. As is well known they become epileptic, the fits occurring, however, only when a small area of skin near the angle of the jaw is pinched. But the point to which I would draw attention is this, that the area of special sensibility is also the area of some obscure change which seems to render the part acceptable to lice, for on this space, somewhat larger than a shilling, they cluster in remarkable abundance. There is no perceptible change in the skin or the hair, the temperature is not materially altered, the blood brought to the part is the common blood; there may, perhaps, be a change in secretion. Let us pass to a simple tumour, a fatty tumour, or a wart. Here in the one case we have a common blood circulating through all the fat in the body, but in one part there forms a separate overgrowth, due surely to some nutritive or formative change

in the part; so in warts the increased development of the cells of the rete mucosum must be due to the part, not to the blood. If the part is capable of initiating those changes which lead to tumour formation, why assume that in tumours which show more characters of tissue change there must be some additional agency outside the tissue, in operation?

And this leads me to the question, is there any essential difference between cancer and other malignant growths, or between these and any tumour whatever? I mean, of course, genetically; for structurally there will be differences in abundance, and in behaviour perhaps still more. But the acarus folliculorum and the trichina spiralis differ from one another more widely, though both are simple parasites.

We may take a lipoma. We find that in the midst of the ordinary fat of the body a separate mass is developed, which continues to grow indefinitely, which may at last thin the skin and cause its ulceration. We find that the tendency to this form of tumour is sometimes hereditary, that sometimes there are two or many more, that sometimes they are recurrent. The tissue is of pure fat and we cannot generally detect any difference between it and the ordinary fat in which it is embedded. But there must from the first have been some property in the tissue from which the fat was developed different from and in excess of what existed in the normal fat layer. Here the history of the fat-tumour ends; nothing more comes of it. We recognise the fact that the more the structure of a tumour resembles a natural structure the less the power of doing harm. This is especially the case with fat-cells, which when once formed cease to perform any active function. But, it may be said, there is an essential difference between a cancer and a lipoma in regard to similarity to natural tissue; histologically there is, but as to mode of genesis there need be none. Admit that the elements of any tissue may take on independent action, and no line can be drawn between the mode of origin of the simplest and the most malignant of tumours.

We may take another tumour—enchrondroma. Here springing up usually though not always in a part of which cartilage forms or has formed one of the natural constituents, we find a tumour which may grow indefinitely, and which often remains, like a lipoma, fixed to its original seat of growth. The texture may be at first indistinguishable from pure cartilage. So far there

is no material difference between the modes of growth in a lipoma and an enchondroma. But a cartilage tumour having once formed may go on to further changes. There may be from the first an indication of some difference from normal cartilage. Instead of remaining stationary, as cartilage, it may go on to form bone, or may break down into cavities containing nuclear and fibrillated and jelly-like substance, and then we may have dissemination to any extent. The original tumour may have become converted into a cystic growth, more sarcomatous than enchondromatous in its character, but the secondary growths will often revert to cartilage structure, while sometimes they will appear as sarcoma. It is not difficult to understand why an enchondroma differs from a lipoma. The fat-cells of a lipoma have reached their full term of activity. Cartilage-cells are multiplying and active. In the disseminating tumours there is no cyst, their elements can become free and may get into the lymphatic or blood-vessels, and be transported to distant parts and grow there. We may have all varieties of activity of growth from the nodule of cartilage which goes on to form a simple exostosis to a structure in which the cells seem to be set free from all restraint as to number, or form, or change of character. In these latter cases we get into the region of malignancy, but who can draw a line separating a class which resemble lipomata in simplicity from those which are allied to cancer? We have no proof of the power of natural cartilage-cells to increase and multiply when detached from their natural position, but we have it in the case of the allied structure—bone. Here experiment has shown that the periosteal cells if scraped from the inner surface of the membrane, and embedded in muscle or connective tissue, will form bone nodules. The experimentation is rough as compared with that which is worked out in the body in the case of disseminated cartilage or osteal growths. Once admit that the cartilage-cell-holding tissue can throw off the laws which regulate natural growth, and I do not see where or why it becomes necessary to invoke any other aid.

It is certainly impossible to say why one enchondroma should remain as pure cartilage and another go on to softening and dissemination. It is, we know, the tendency of tumours to deviate from those fixed laws of growth which regulate the size and form of our natural structures. Even tumours most resembling natural organs show this. An adenoma of the breast, for example, may vary in character from a compact gland-like structure indistinguish-

able from that of a natural mammary gland to a soft flickering substance, containing proliferating cysts and merging into a cystic sarcoma. Surely in such cases one can only recognise a disposition, more or less pronounced, to perverse development in an atom of natural tissue. No one would, I presume, consider a special quality of blood necessary to account for them. But the fat-tissue or the cartilage or the gland-like substance will grow alike indefinitely and irregularly, and their ultimate texture may present as many deviations from that of natural tissues as does their gross mass. And so with regard to sarcoma or fibroma in all their varieties; they do not differ more from forms seen at one time or another in natural development than do enchondroma or adenoma in their advanced stages. Many of these prove to be fearfully malignant; their elements will be carried away and form new centres of growth, and destroy their possessors as surely as will scirrhus. But what line can be drawn between perverse local development and this development plus blood-poison?

Can it be said that there is something in cancer which is not contained in those other forms of infecting diseases which I have mentioned? Surely not, for though scirrhus may, as a rule, contaminate the system more certainly and thoroughly, yet as much cannot be said for epithelioma, and it does not apply at all to rodent cancer, which, according to all recent authorities, must be regarded as a modification of epithelioma. As we shall see, the mere structural peculiarities will explain the differences in the degree of malignancy found in the various forms of cancerous and other tumours. In most cases the first notice we have is the appearance of a tumour, and in those of internal cancerous or other allied tumours, the new growths may have attained a large size, and have spread and infected many other parts before any sign is shown of their existence. This is widely different from what we see in blood diseases generally, in which some symptoms, inflammatory or other, precede or immediately follow the outbreak of local disorder. But what symptoms of cancer in its early stages can we find beyond those afforded by the mere existence of the tumour itself? Is it not rather the case that our suspicions are aroused by the very insidiousness of the local disease? There are some things, indeed, which do make us suspicious of a cancerous future, but they are purely local conditions, and may exist for years before any real malignant disease shows itself. When, for example, with cancerous antecedents we find an unde-

veloped testicle, or a breast which is unable to perform its functions, or when the skin is the seat of brown scales or moles which as we advance in life become larger or perhaps irritable, or where the tongue is icthyotic. So too we shall see without surprise a cancer grow when the lip has been long irritated by the pipe, or the tongue by a jagged tooth, or the scrotum by soot. In regard to this latter source of irritation a curious question arises. Chimney-sweep's cancer used to be a very frequent disease. The disuse of climbing and the cleanlier habits of the sweeps have greatly diminished the number of such cases. If, then, epithelioma be a blood disease at all, the probability is, the number of cancerous persons remaining the same, that if the local seat be not found so often in the scrotum, it must be established elsewhere. Consequently we ought to find an increase in the frequency of cancer in other situations.

We may now come to the question, Why should malignant growths, some cancers especially, when once formed, infect neighbouring and distant parts, and ultimately contaminate the system? The knowledge we have of late years acquired of the independent actions of cells renders a solution more easy, though I admit that it is not free from difficulties. It has long been known that cells are dispersed around a cancer tumour, the direction and rapidity of the dispersion varying according to the density of the tissues and the abundance of connective-tissue spaces, or of lymphatic or vascular networks in which it lies. It is now known that the white blood-corpuscles can wander from their vessels; more recently it has been seen that cancer-cells, like the white corpuscles, show amœboid movements and can thus travel independently in tissue spaces or even permeate delicate membrane. There is no doubt, I suppose, that these cells, whether the matter that forms their nuclei or the free granules, are the active agents in the reproduction of cancer. We can understand that these cancer germs may thus travel through their own power, or be carried along in the vascular systems or connective spaces in every possible direction. And it must be remembered that cancer is for the most part a structure infiltrating itself amongst the tissues in which it lies, not surrounded by a capsule or limitary membrane of any sort, as are so many non-infecting tumours. The newly developing and active cells are always in direct contact with the healthy tissues on which, in fact, they are living. Once set free, the cells may travel in the three channels I have indicated:—1st, and chiefly, they may travel

along the lymphatics to the glands where they will form new centres of growth, and by continual invasion affect a series of them and, perhaps, contaminate the lymph itself; or, 2nd, they may travel through the surrounding tissues, their direction being often determined by the density of the tissue. Thus, it is often noticed that after breast operations the disease will reappear above or below the cicatrix, and will travel on the same plane, not passing across the dense cicatricial tissue. The disease will seem to prefer the easier course, but the densest tissues will not prevent this permeation. In malignant intraocular growths the germs are found at times extending through the dense sclerotic and then bursting out into new growth in the free periocular structures. 3rd. They may pass into the blood-vessels and thus into the general current of the circulation; hence we may get infection of internal organs or of parts widely removed from the original tumour.

We have evidence of this mode of conveyance in many recorded cases of sarcoma and enchondroma; and the secondary cancer growths in the lung and liver, so like, in many respects, to the deposits we get in pyæmia, point to the same mode of origin.

Besides these principal modes of conveyance, we meet at times with evidence of conveyance in free cavities by gravitation, and sometimes, but rarely, of implantation by auto-inoculation.

There are some tumours of which the elements are disseminated far more rapidly than are those of cancer; on the other hand, some cancers show little tendency to dissemination. A small melanotic sarcoma, for example, will often give rise to numberless secondary growths in a marvellously short space of time. This is, perhaps, due to the great activity of growth, and the abundance of granular matter which often characterise this form of tumour. If we look to epithelioma, on the other hand, we see that great and destructive as may be its local action, yet its area is usually limited to the part first invaded and the contiguous lymphatic glands. The structure explains this. The component cells are coarser, have less independent movement, are more packed together, sometimes becoming coherent. They may pass into the lymphatics—coarser matter will do that—but, like the cells from which they originate, they are little disposed to wander; the tumour grows more by continuity, less by dispersion. This is still more marked in rodent cancer, where the cell activity is at a minimum and the ulcerative keeps pace with the formative processes.

It seems to me, then, that we can account for the diffusion of cancer when once formed without calling to our aid a pre-existing or concurrent disease of the blood.

Admitting that cancer like other infecting tumours is reproduced by the growth of germs, which have been conveyed from it to distant parts, the question arises, How can we account for the fact that after removal there may be no reproduction for years? Can it be imagined that during all this interval the germs of disease deposited from the original tumour have remained inactive? Is not this contrary to the nature of cancer, and does it not show that there is a cancerous poison in the system? I admit the difficulty, but it is not removed by assuming that the blood or the system are primarily diseased. My conviction is that cancer and other tumours may remain in a rudimentary state for an indefinite length of time. In the case of recurrent cancer we often see that an enlarged and hard gland which is left after the removal of the main tumour will remain quiescent for years, and that then active growth will set in. The same will take place in a cicatrix which has perhaps remained hard. It may be said that this is only an evidence of the return of the blood to a cancerous state. But it is as difficult to understand the quiescence of the blood during this long time as of the cancer germs. Many facts, both in normal and morbid development, are indicative of the possibility of tissue remaining unchanged for long periods, and then taking on new phases of growth. Such are, for example, the change of epiphysial cartilage to bone after twenty years; the change in the female breast at the period of puberty; the shedding of the milk teeth, and the development of the second set. Still more to the point are perhaps such instances as the frequent enlargement of the prostate gland in advanced age, or the growth of hair on the female face from follicles which had existed, but in an inactive state, for sixty years. It is not at all improbable that what is here seen as a result of advancing degeneration often plays its part in cancer development. It is probable too, though it may not admit of proof, that in those cases which are so common of hereditary lipoma or sebaceous or dermal cyst, the rudiments are present from the first. We know as a fact that such tumours will remain small, only just perceptible perhaps, for twenty or thirty years, and will then take on active growth. In the imperfect structure of an inefficient mammary gland or of an abortive testicle is there not present from

the earliest period some form of indifferent tissue prone to irregular development, but quiescent during the active periods of life? This is rendered the more probable from what is so frequently found in connection with epithelioma. We have here on the surface what may be hidden in the case of the deeper glands. Scales or warts or moles, some imperfect epithelial growths, may remain without change for fifty years, and then may become the seats of cancerous growth. If such a scale or other imperfect tissue were persistently irritated it would doubtless become cancerous at an earlier period. Cancer has been there potentially for years, but its time has not come. Such I believe is the explanation of the fact that cancer germs which have wandered from the parent tumour may remain quiet for an indefinite length of time. I can see no other way of accounting for such cases as this. A tumour is removed—a year afterwards a small nodule not so large as a split pea is discovered and removed, no other nodule being perceptible on careful search. After a long interval another small nodule is found and removed, and again there is quiescence. This may be again repeated. Can we suppose that there are continual reproductions of a blood poison followed by periods of healthy condition?

While I believe it probable that the germs of cancer may thus remain in a sort of dormant condition for long periods of time, I would by no means imply that there is not in cancerous patients a special disposition to tissue change, located in some but not in all the structures of the body. The general tendency to degeneration may give rise to the primary local change; so may local irritation. Thus out of a hundred chimney sweeps or claypipe smokers a certain number may have chimney sweep's cancer or lip cancer, the number varying, perhaps, according to the duration and extent of the irritation. But the majority will not become cancerous, irritate how you will; and of the remainder few probably would have cancer unless irritation were applied. The same remark may be made as to such ordinary growths as warts. In some the least irritation will produce them. In others they never will appear. Like other tumours too they have their seats of election and their favorable period of life, and they often appear to be inherited.

There are other facts observable in the later course of a cancerous disease which are difficult of explanation either on the hypothesis of blood disease or of localisation. For example, a local cancer in an ordinary situation may give rise to a general disease of

a structure totally different from it. We meet, for example, with a widespread disease of the osseous system following a breast cancer, and the disease may not show itself as cancer deposit, but as entire absorption. This may be seen in many of the bodies of the vertebræ, which may totally or partially disappear, without any cancer growth being detected, and while yet cancer deposit is taking place in other bones.

These, no doubt, are exceptional cases. We find, however, that natural tissues are at times disposed to undergo changes which are equally inexplicable. The changes taking place in some, out of all the muscles of the body; the fibrous growths on a number of the nerve cords in multiple neuroma, and other cases, show that local tendencies to tissue change exist in the detached parts of general tissues. They may be allied to the degenerative changes which pervade unequally particular tracts of the arterial system. We cannot as yet account for these and such like facts, but whatever may be the local condition which thus determines special tissue change, whether its seat be in the parenchyma or in the nervous system, the same may possibly determine a preference for deposit or degeneration under the conditions of progressive cancer. We have, in fact, to solve the question, Why have diseases seats of election at all?

Another remarkable and not very explicable phenomenon is the arrest of cancerous growth and the gradual wasting of the diseased mass. This is an occasional event which is very important, as it encourages us to hope that a cure may yet be found for the disease.

Although this recession of cancer is sometimes coincident with the development of tubercle, I doubt whether we have sufficient data on which to establish the conclusion that the one disease is antagonistic to the other. It is, however, worthy of note that, frequent as is the occurrence of cancer in consumptive families, the coexistence of the two diseases in one member is not a common event. But cancer is a disease of the middle and later periods of life, and tubercle generally of an earlier one. Those who live to be victims of cancer have passed the period when tubercle would be most likely to set in. That this arrest or recession is not due to any exhaustion of the cancerous element in the body is shown by the fact that while the disease is retrogressive in one part it is in active growth in another. The retrogression differs from the degeneration of the earlier formed cells which is constantly going

on in the interior of tumours as shown by the presence of fat-granules, compound granular cells, and such like. In the case alluded to the activity of the whole mass is arrested: new cells cease to be formed and the tumour fades. I doubt whether this can be from the plugging of the vessels feeding the tumour. This no doubt often takes place, and the death of some portion of the mass may be the result. But when we find a widely spread mass becoming quiescent and then fading throughout its whole extent, we must, I think, look to some other cause. For cancer is so far like a parasite that it draws its nourishment largely from the tissues in which it lies. When, for example, a nodule of enchondroma or of sarcoma is detached and floated off in the current of the circulation, and afterwards grows in the lung or the liver, it must in the first instance obtain its nourishment from surrounding tissues. We must look elsewhere for an explanation. It only shifts the difficulty back a stage or two, as I have so often done before, to suggest that the recession of cancer takes place in obedience to the law under which local atrophy, independent of inflammation or disuse, may occur, or that it may be due to some want of organising power inherent in it from the first, as some cancers seem born to be atrophic.

It is under any circumstances a most important subject for investigation.

Lastly, I would suggest the question, Why is it that cancer if a blood disease should be so pre-eminently a disease of women? Taking all cases together I suppose we should not be far wrong in saying that the uterus and the mammary gland are the seats of the disease in ninety per cent. Does it not look as if the mere tissue changes dependent on the peculiar vital condition of these organs were the starting-points of the disease? Were it not so, and if the disease were from the first in the blood, surely we should find that men were as prone to cancer as women. Other forms of tumour are nearly as prevalent in the one sex as the other. It is a point worthy of consideration.

I must now apologise to the Society for having so long occupied its time in a mere enunciation of opinions of which many must be considered as now commonplace. Some may be regarded as vague and shadowy. Long as my remarks have been, I have felt that, without overstepping the bounds of your forbearance, I could not do justice to any one of the subjects on which I have entered. I have,

however, the satisfaction of feeling that, without reference to my shortcomings, they will afford ample material for discussion by those who differ from or who agree with me, and who will, by giving us the aid of their experience, their observation, and their reflection, throw a light upon the nature of this fearful enemy, and thus upon the means by which we may accomplish its overthrow.

The President called on Mr. Simon to continue the discussion.

Mr. Simon.—Sir, I rise in answer to your summons, but it is the last thing I should have thought of doing except in obedience to you. Not because I should not wish to argue some of the points which have been raised in this paper, but because I feel that so very thoughtful and so well-prepared a paper can hardly be dealt with in extemporaneous argument, hardly, indeed, in any adequate degree, unless in an essay as complete and deliberate as itself. But at least I am very glad to have the opportunity of saying how very deeply, in my opinion, the science of our present subject is indebted to the clinical study of cancer which has been made at the Middlesex Hospital, and eminently by Mr. De Morgan himself. I agree with Mr. De Morgan in thinking that, in view of that experience, no one can now maintain the notion of any direct origination of cancer from a previous general empoisonment of the blood. That doctrine, not only in the literal sense in which a quarter of a century ago it was put forward by various writers, but also in a still larger sense, seems now to have been disposed of. We may, I think, assume that those who argued for the blood as the exciting cause of cancer meant less to insist on the blood alone as their cause than to insist on the influence of the total chemistry, the total material constitution of the body, as represented in the blood; that they were not arguing as humoralists against solidists, but were arguing for a general, as against a local, exciting cause of cancer. Now, I entirely agree with Mr. De Morgan that, in the light of present knowledge, the cancer-process cannot be said to have its exciting cause in the blood or general chemistry of the body in the sense which was then intended. I agree with him that cancer cannot be said to have any ostensible existence except as a morbid process of local, and almost always uni-local, commencement; that cancerous cachexia, as commonly understood, has no ostensible reality except as a sequel and effect of the cancerous local process. But I think that Mr. De Morgan, while denying importance to the blood as an exciting cause of cancer, has not done justice to the influence which the total con-

stitution of the body exerts on the development of cancer, in at least the sense of predisposition. When we look on the one hand at the hereditariness of the disease, fully established as it is in a large proportion of cases, and when we look, on the other hand, at the insusceptibility of bodies generally to the inoculation of cancer, I think we are justified in concluding that a specific predisposition is necessary. And I suppose it is this which is hereditary; not that actual germs of disease would be traceable in the ovum or embryo, like those which (as M. Pasteur has observed) make the pébrine of the silkworm hereditary; but that a certain quality of bodily material, a certain aptitude of soil for the eventual operation of the exciting cause of the disease, goes hereditarily, as a distinctive and specific qualifying condition, in the developmental system of the body. And it seems to me that anything which hereditary succession thus contributes to the causation of cancer would peculiarly correspond to what we mean by the word "constitutional." But Mr. De Morgan, as I understand him, even combats the notion of specificity of cancer; and much which we think most characteristic of its progress is attributed by him to an almost accidental mobility of its elements. I find it here necessary to say (and indeed ought earlier to have said it) that I am venturing to use the word "cancer" in its old-fashioned sense, not in that strictly anatomical sense to which present usage, I think very inconveniently, desires to confine it. In a discussion like the present we want a word that shall cover, at least provisionally, all or most which our predecessors called cancerous; whether scirrhus of the breast, or medullary sarcoma of an extremity, or glioma of the globe of the eye, or epithelioma of the penis, or other such "malignant" tumour or ulcer; and, failing a new generic word to cover those types of disease, the old word "cancer," in its old sense, seems the most convenient. Now, using the word in that sense, and meaning to distinguish between "cancer" on the one hand, and "non-cancerous" tumours on the other, and seeming to myself to see two fundamentally different classes of disease, I have to consider whether that apparently fundamental difference is but a difference in the cohesion of the anatomical elements. I confess that I cannot so consider it. Though speaking, of course, in Mr. De Morgan's presence with great diffidence, I would say that I believe quite differently of the specificity of cancer. I believe that there is an absolute dynamical difference between the two sorts of tumours; that tumours of the one sort ought to be classed as "monstrosities"

and that tumours of the other sort ought to be classed as "zymotic:" that an essential difference of origin goes with the difference whether a tumour is or is not infective.

I fully agree with Mr. De Morgan that the differences between those two great divisions of disease are not universally expressed in well-marked differences of anatomical forms. Anatomical differences no doubt there commonly are, but not such as admit of being stated in general principle as coextensive with the dynamical differences. Admitting that "cancer" in its old clinical sense is a disease without anatomical definition, I would suggest, in explanation of the fact, the reason which has seemed to me obvious. The anatomical phenomena of primary cancer, stated in the most general terms, are phenomena of excited growth. Whatever ordinary stimulus is applied to any part, the part can only give certain vegetative results; and the histologist knows, according to the type of each part, what anatomical changes are possible to it when thus excited. No given structure shows under such circumstances an unqualified desertion of its own type; not only it cannot give bricks and mortar, but it cannot be heterologous except in an extremely restricted sense. It can give overgrowths that shall be more or less embryonic; it can give, in those more or less embryonic and abortive forms which it produces, evidence that its process is more or less tumultuous; but when one has counted a few heads of that sort, one has exhausted the possibility of active variation in nutritive processes. The tumours which are non-cancerous and which I have spoken of as mere "monstrosities" (believing them to belong as truly within that pathological class as does any supernumerary finger or toe) have, broadly, this anatomical difference from "cancer," that they are more apt to consist of well-defined adult tissue than of imperfectly differentiated or transitional forms; but this apparently is but a difference of degree; and there probably is, as Mr. De Morgan contends, an absence of complete anatomical distinction. When the primary stimulus of cancer (whatever it may be) operates on the part, apparently the part, according to its own nature, according to its own type of structure, undergoes its own sort of changes; much as if any other stimulus were acting on it; giving, for instance, if the organ is a glandular or epithelial one, that alveolated structure which has been claimed as specially cancerous; but giving on the other hand, if the affected organ is of the connective-tissue series, some one of the many possibilities of

stromatoid tumour: phenomena which it is extremely difficult in either case to define as truly heterologous.

Again, if cancer is not easily to be defined by its anatomical differences, also it is not to be defined by the quality of relapsiveness: for the merest monstrosities, the merest uni-textural, or uni-sectional, hypertrophies, may relapse. I remember a great many years ago to have removed from the top of a lady's chest a little fibroid tumour. She had had the disease removed before, but it had come back again; and now, in removing it, I went widely into the surrounding parts and brought the edges together with three harelip pins. A few weeks afterwards I found that the tumour was growing again, and that in addition each of the six pin-holes was giving rise to a little fibroid growth of its own. Eventually the growths all shrank under the use of ice, and the lady, now approaching mid-life, has had no subsequent inconvenience. Relapsiveness of that sort only indicates that the hypertrophic tendency occupies a larger area than the actual hypertrophic manifestation; and, indeed, only the result of operation can ever enable us positively to say what, in that sense, are the true limits of any tumour. But as regards the comparative insignificance of mere local relapsiveness in relation to such essential distinctions as we are seeking for, it is enough to adduce the fact (which Mr. Darwin has made familiar by a curious collection of cases which have been from time to time published in the medical journals) that, again and again, the relapse has been observed of supernumerary fingers which have been amputated. This, it seems to me, is peculiarly a case in point: for, if the non-cancerous tumours are to be classed as monstrosities—monstrosities which are of congenital endowment though the exercise of the endowment is deferred—here, with the supernumerary finger, is at any rate a clear case of monstrosity that relapses after operation.

Again, if relapsiveness is not any test of cancer, still less is plurality, original plurality, of tumours a test of it. Tumours of the sorts which I class as mere monstrosities are sometimes produced in numbers at one time in a given texture of the body, by virtue of a peculiarity resident in the one texture, a simply hypertrophic tendency in several spots of it; and this, which where it occurs is often hereditary, is something entirely different from the tendency of cancer to multiply itself by successive manifestations and without any regard to unity of texture. It is not very rare to see cartilaginous tumours thus multiple, without any trace of cancerous meaning in them: I recollect seeing a boy with seventeen such on

his two hands; or you may get a scalp dotted over with scores of sebaceous tumours, or you may get any number of fatty tumours scattered about the body. And, as I noted, it may run in a family that some particular texture has that sort of tendency: respecting which we can only conceive that the texture is congenitally peculiar, as having in it a number of points with hypertrophic force latent in them, ready at some future time to go simultaneously into their act of simple hypertrophy: but this, I repeat, is something utterly different from what lies at the root of cancer.

Briefly, then, "cancer" in the sense in which I use the word is not a disease of one anatomical form, nor a disease which has its criterion in any local relapsiveness, or in any original plurality, but is a disease of which the one essential character is dynamical, consisting in that specific force which is popularly known as its "malignancy." It is by virtue of this quality that "cancer" is a disease *sui generis;* and this quality, I would venture to contend, is not a matter of mobility of textural elements.

What, then, is the essence of that specific force? The part primarily affected exercises on the tissues which receive its juices an influence for which we can hardly use another term than impregnative or spermatic influence; that is to say, it causes these other tissues to fructify in conformity with its own deranged pattern. Mr. De Morgan thinks that the secondary growths are a mere affair of transplantation, merely the growth of transplanted and engrafted elements; and no doubt a great deal turns upon this as a question of fact. Some very thorough observations which have been made by a friend of mine who is in the room, Dr. Creighton, seem to point in a very different direction. I will not say that there is no possibility of the growth of a transplanted bit of tumour; no doubt there is, and it would be very strange if there were not. But Dr. Creighton's studies with regard to the formation of secondary cancerous tumours have seemed to show something very different from that; they have seemed to show in the organs secondarily affected, not mere grafts of the primary tumour undergoing increase, but a definite sphere of the secondarily affected organ undergoing changes in its own elements, and growing by way of such elementary changes into the likeness of the primary tumour.

It seems to me that if we are to interpret cancer as a morbid process, we must take it in connection with kindred processes, and consequently as part of a very large subject. One has no more right to

deny the specificity of cancer because the material forms of cancer are not always to be separately identified than one would have to deny the specificity of smallpox because the pyrexia of smallpox does not importantly differ from the pyrexia of measles or scarlatina. Cancer presents itself to my mind as but part of the very large subject of chronic dyscrasies due to local infection. For a good interpretation of cancer, for the true analogies of the disease, I think we must look, not at the monstrosity-tumours, the mere idiopathic hypertrophies, but rather at tubercle and at syphilis. Studies which have been dwelt upon in this room, in the admirable discussions of last year, and indeed of many years past, on the subject of tubercle, have thoroughly altered old impressions in relation to that disease, and have shown that tubercle which used to be spoken of as the very type of diseases of constitutioual origin is, on the contrary, in most intimate association with contagious processes. Subject to the existence of certain predisposing facilities, tubercle is shown to be indubitably contagious from body to body, just as for many years it has been known to be contagious from organ to organ within the limits of the body which it first possesses; and its contagium is apparently traced into intimate connection with the common septic ferments. Far be it from me to say that such contagion from outside the body is always the exciting cause of tubercle; but that the disease can arise from such contagium is quite certain, and in regard of the cases where this occurs, it is very important to note the relation between the exciting and the predisposing influence. What the former may be I do not pretend to say, except that (as Dr. Sanderson has shown) it is in intimate connection with the ferments which produce septicæmia and pyæmia; but be it what it may, we see that among the several sorts of animals which are subjected to tuberculising inoculations, some sorts scarcely suffer at all, while others (as notably the rodent animals) can almost universally be infected. Now, the differences of zymotic susceptibility which we so see illustrated on a large scale are a quality of race, are a hereditary quality; and the meaning of hereditary human liability to tubercle or cancer is, I think, best appreciated with the context of that class of experiments, where unquestionably parentage only supplies a special predisposition, while the equally indispensable exciting cause comes *ab extra*. Then compare syphilis and cancer; taking, on the one hand, a chancre inoculation, say on the lip, with affections of the lymph glands, followed after a certain number of years by tertiary gummosities through

out the body and taking on the other hand, an epithelial cancer of the lip, with its secondary affection of lymph-glands and subsequent identical affection of, say, the lung or liver,—can we say that those two cases differ more from one another than we might reasonably expect two species of morbid poison to differ? Well, then, do I say that cancer comes *ab extra?*—that cancer is an accidental inoculation in the part where it occurs? No, I am yet a long way from affirming that; I only suggest it as a line for investigation. If in the present state of knowledge on the subject we are driven as a first stage to the doctrine, which Mr. De Morgan has so well defended and illustrated, of the local, and almost invariably uni-local, origin of cancer, we are at the same time driven to recognise that the essence of that local disease is to initiate in a spot of specifically predisposed tissue a specific impregnative influence. When such an influence is developed in that single spot of the body, what new impulse has started it? We apparently have to choose between two positions; on the one hand, that there has arisen autopathically in that spot of the body a property entirely *sui generis*, something for which we have otherwise no analogue in any of our experiences of the body; or, on the other hand, that there is a contagium from outside. It seems to me that we can hardly escape that alternative. I do not venture to insist upon the doctrine of an external contagium in cancer. The point on which I have wished to insist, however imperfectly I may have succeeded: for this matter ought to be discussed far more deliberately, if justice is to be done either to the admirable argument of Mr. De Morgan or to the one which I have been stating: the point which seems to me really cardinal, is this: that the cancer-process, followed from first to last, is such as to establish for cancer an evident analogy with tubercle, and, if less evidently, still, I think, certainly, an analogy with syphilis; and that here apparently is a family of diseases as definite as the family of infective fevers,—a family, I mean, consisting of those chronic dyscrasies which arise in local infection. But whether the local infection in cancer, the starting of that strange "spermatic" influence of which I have spoken, be a local neogenesis, a something truly indigenous to the body, or be, on the contrary, a contagium *ab extra*, seems to me, as I have said, rather a matter for investigation than a question on which I would here pretend to speculate.

Mr. Jonathan Hutchinson.—I have listened with extreme pleasure to the very able paper which Mr. De Morgan has read to us, and my pleasure perhaps has been the greater because his views are very much those which I entertain myself. Some fourteen or fifteen years ago I read a paper before the Hunterian Society on a similar subject, contending for the local origin of cancer; and I have, ever since that time, taught this doctrine to the students with whom I have come into contact as earnestly as I could, because I think that in the belief of the local origin of cancer rests our only hope of dealing satisfactorily with it as surgeons; and I also believe that our patients' interests are prejudiced most seriously by the sort of hesitancy in the acceptance of this doctrine which prevails in a large section of the profession.

It must happen, sir, to you, and to all members of this Society, very frequently indeed, to see cases which, if treated at an early stage, on the theory of local origin, might have been satisfactorily cured, but which, having been neglected, have allowed the disease to get possession of the body, to infect the blood, to infect the glands, and thus a malady which was curable in the early stage has become in the end totally hopeless. I quite concur with the concluding remarks of Mr. De Morgan's paper, that it is in this direction that we must hope to fight the foe. I fear not on a very large scale, because there will still remain a great proportion of cancer-cases in which the disease is local at first, but occurs in a position in which it cannot be attacked. But, putting those aside, we shall still have a very considerable number which we can attack most satisfactorily if we will but believe that it begins as a local disease.

Now, in contending that cancer is, for all practical purposes, a local disease, and that it is very important for surgeons to believe that it is such, I by no means wish to put aside the argument of those who say that it is also constitutional. I think Mr. De Morgan hit the point very exactly. So far as I understand his argument, it was that cancer is not a blood-disease. To use the expression "a blood-disease" is to mislead us. I was glad to hear a remark which came from Mr. Simon, to the effect that those who, in former years, perhaps somewhat erroneously, used this expression, had done so without any intention of excluding the solid elements of the body. No doubt it is, so far as it is a constitutional disease, a disease of the solid tissues rather than of the blood. I

think the sooner we get rid of the expression "blood-disease," and use the term "constitutional" or "disease of the tissues," the sooner we shall get to clear ideas on the subject.

Then we come to the very difficult subject which Mr. Simon has just been arguing. Here, again, I thank him most sincerely for protesting against the right of modern histologists—to whom we owe so much (and no one is more thankful to them than I am for their work in a special branch of the subject)—to give a new meaning to the term cancer. I think it is far better to keep our old words in their old uses. Although histologists may classify the various diseases which make up morbid growths and cancers, more minutely according to their histological structure, still I think it is far better that they should not take either the terms carcinoma or cancer, and give to them restrictive and for the most part new meanings. I know there are difficulties, and I was glad to see that it was a difficulty also to Mr. De Morgan, who, I believe, adopts the new classification, to continue the use of the term always accurately. He used it several times in the modern sense, and several times, I think, in the old and much more comprehensive sense. It would be in the comprehensive sense that I should like to use it, as denoting all forms which can be classed as malignant diseases.

To refer next to Mr. Simon's question, as to whether cancer is "specific" or not, I confess I do not attach so much importance to it as Mr. Simon appeared to do, because, after all, specificity is relational. If I say a thing is specific, I mean that it is specific in relation to something else; and I have to define what each of these things is from which I say it specifically differs. There is no doubt cancer has peculiarities, otherwise we should not need to have any name for it; and there is no doubt, again, that almost all the morbid processes in the human body have also relationships, and what we have to do is rather to define the degree of relationship which they have to each other, than to contend that this and that are so absolutely distinct that we can say that this is one species, and that another. We must define the word "species" before, as it seems to me, we shall gain any practical good by arguing as to whether cancer is a separate species or not. A separate species from what? It enters, I think, by degrees, which it is very difficult to distinguish, into relationships with several other diseases which have been already alluded to this evening. Illustrating its relationships, I would mention one which, I think, has escaped Mr. De Morgan's

attention, and that is, the occasional transmutation in hereditary transmission. This is a line of argument which I think may be applied in elucidating the relationships of many other diseases besides cancer. I believe we might prove conclusively the essential relationship of different disorders or diseases, which have different names, by observing that in hereditary transmission we often get them transmuted. Suppose you get rheumatic gout transmuted into gout, or that, in the transmission of gout, you get rheumatic gout as the product; then I hold that those two things are proved to stand in very close relationship to each other.

Now, take the case of the transmsssion of what I would ask permission to call the cancerous tendency or proclivity, and which, I suppose, consists in some kind of morbid mobility of cell growth—a tendency to go into insurrection amongst the cells—an unwillingness to submit to continuous government, exhibiting something of the difference which (if I may use such an illustration without offence) exists among the different races of mankind. Amongst the stupid Teutonic races there is a willingness to submit, even to a certain amount of oppression, rather than rebel; while, amongst the more vivacious and freedom-loving Celts, there is a proneness to rebel, and an unwillingness to submit continuously for a long period to any systematic government. So I think we have, in different individuals, some sort of different mobility of tissue. In one person the tissues are held together by a somewhat slighter tie than they are in others, and, under certain kinds of irritation, they rebel, and the cells set up on their own account, and establish a little *imperium in imperio*, and to that rebellion of the cells we give the name of "cancer." The difference which exists between different nations in respect to proneness to civil turmoil furnishes, I suspect, a very apt parallel to that which we find in individuals in reference to cancer.

Then I wish to ask, as a matter of purely clinical fact, whether we do not sometimes observe, in the hereditary transmission of the cancerous tendency, transmutation; and whether we do not, in the fact of transmutation, get a proof of relationship? I allude especially to the distinction between innocent tumours and malignant tumours. I rather put the question to those who have more experience on the point than myself, whether it is not tolerably common to notice this. I believe the most definite instance of it is in respect of common warts. It has chanced that I have had some remarkable instances myself. I believe that patients who are liable

to common warts, in unusual numbers, will generally be found to have had relatives who have suffered from cancer. I believe this is an observation which came first from that home of observation in reference to cancer—the Middlesex Hospital. Mr. De Morgan will correct me if I am wrong. I think it has been noticed there—and I can confirm it—that in several remarkable cases, in which patients were covered almost from head to foot with warts, there were near blood-relations who had suffered from cancer; and there has certainly been observed, in hereditary transmission, the same proof of relationship between the various forms of innocent growths and those strictly malignant.

Then, as regards hereditary transmission, there is another interesting class of facts which should be carefully collected—that is, as to what becomes of the offspring born to parents who were cancerous at the period of birth or conception of the child. I should think that we might easily collect a considerable number of instances of that kind, and I feel sure we might get some interesting facts from them. It has happened to me to investigate these facts, in several cases in which very young children became the subjects of cancer. I recollect, especially, one young lad, remarkably healthy and well-grown, who, at the age of eighteen months, became the subject of cancer of the testis. In his case there was a most definite history of cancer in near relatives; and in several other instances I have seen the same thing. It may be observed, also, that the kind of cancer is often changed; that the mother, for instance, who has suffered from cancer of the breast, bears a child who, perhaps, suffers from one of the various forms of cancerous action which attack the different tissues of the eye.

In passing, let me remark, that I suppose we have come pretty much to the conclusion, that the differences in the cancers and malignant tumours depend on the tissue in which the cancerous action commences. The cancerous action, if we may be permitted to use such a term, is pretty much one and the same, and the differences depend upon the cell-tissue in which that action begins. I think we very often see a transmutation in hereditary transmission that—which was scirrhus in the mother becomes, perhaps, a soft cancer in the child.

I think these are most of the observations I wish to make, but I cannot help again thanking Mr. De Morgan for his very able paper, and for directing the attention of the profession to a most important subject.

I headed a short article that I wrote, ten years ago, in the 'London Hospital Reports,' "The Successful Cultivation of Cancer," and in it I ventured to give precise directions to those who wished to let their cases pass into cancer how they should do it. My suggestions were that patients with hard-edged ulcers on the tongue should be told to touch them once a week with caustic and come again in three months; the man with a wart on his lip allowed to go on smoking a short pipe and picking the top occasionally, and the subject of a little glossy-edged sore on the eyelid confidently assured that it was of no consequence, and might be left to itself and cold cream. I felt great confidence—trusting to the theory of local origin—in recommending such measures as are tolerably certain to be frequently successful in developing under the surgeon's eye some of the worst forms of cancer. My reason for adopting that title, and for using the style I did, was that I desired to direct the attention of students, and of the profession, to the practical importance of acknowledging the local origin of a great number of forms of cancer, and to the paramount necessity for very early treatment, if we wish to secure our patients against becoming constitutionally affected.

Adjourned Discussion, March 17th, 1874.

Sir James Paget.—I regret that I was unable to be present at the last meeting of the Society; but I have had the advantage of having been able to read the careful report of Mr. De Morgan's speech at the opening discussion, published in the journals, and I probably find therein a very much more nearly complete agreement between myself and him, in reference to the pathology of cancer, than I might have supposed if I had only heard the address delivered, and had seen the preponderance, to all appearance, though not in reality, of the view which he held of what may be generally understood as its local origin. For I find that Mr. De Morgan holds as I do—and not I alone, but I think the larger body of those engaged in the study both of pathology and of surgical practice—that we must look at the same time for a local and for a constitutional origin of cancer. If Mr. De Morgan will allow me, I will read one or two sentences of his own on the matter, that they may serve as a warning to myself lest I should diverge too far. He says, "All, in fact, that we see in the life of cancer naturally leads to the belief that the disease must from the first be more

than a mere local tissue change; and, in one sense, and to a certain extent, I must admit that this belief is well founded." And again, "The view which I would maintain is that, though local in its origin, there is in some, possibly in all cases, a predisposition to the disease which may possibly be distributed through the system, but much more probably has its seat in some among the tissues of the body.' To this doctrine I should entirely conform, and if I can find anything to discuss, or anything in Mr. De Morgan's address to which I can object, it must be, not in a doctrine such as this, but rather in what I may call the only half willing manner in which he seems to admit it—the manner in which he seems disposed to depreciate the belief in a constitutional origin of cancer, or in a constitutional element in the origin of cancer, and to exalt, more than I would, the local element.

For I agree with him entirely that we must hold both a local and a constitutional element as a necessary condition in every or nearly every case of cancer that comes under our observation. And for the purposes of discussion I will admit at once that I should adopt (though from some of them I might verbally dissent) all the definitions which Mr. De Morgan has adduced—his definition of constitutional disease, his limitation in the discussion of cancer to certain well-known species of it. I admit I should not include the rodent ulcer; I think it would be better to exclude it from the general name of cancer. Still, I think, for the purposes of discussion, we should adopt as nearly as we can the limits which the author has laid down, and not wander too far from them.

If, then, we look at the pathology of cancer, which, after all, limit it as we may, is a very wide disease, I think we cannot doubt that there are some cases in which it is very hard to discover anything like a constitutional origin. If we take those cases, though they be of rare occurrence, in which cancer occurs in scars of old burns, such scars as we see from time to time fretting and ulcerating year after year, undergoing for many years no unusual change, and then at last becoming the seats of cancer, we are almost ready to say that there must have been so little, if any, constitutional predisposition to cancer in such a patient that it required some tissue to be specially prepared, through a course of years, before it could either become cancerous or become the seat of cancer. So, too, if we see the perpetual irritation of a lip, which only after years becomes the seat of cancer, it is difficult to say that there has

always been a constitutional predisposition to cancer, when it appears to have required so specially prepared a place for its local manifestation. Nevertheless, even in these cases we not infrequently observe that after passing a large number of years only as what we may call simple ulcers, or ulcers of various names not implying cancerous disease, they suddenly change and become, not gradually cancerous, but, as I would say, the seats of cancer, indicating that there may have been some condition, besides the mere local irritation, out of which cancer has been generated.

Again, if we look at the regular series of morbid growths which can be traced without any apparent interval whatever, from the simplest forms of fatty or fibrous tissue up to the most marked forms of cancer, it may be very hard to indicate the point at which we should maintain that a constitutional predisposition, or any constitutional element has had to be introduced.

If these were the only cases to be studied, I think we might hold that cancer may be completely a local disease, needing, if any, only what we may regard as the lowest degree of some constitutional element for its production. But we must look to the further end of the scale before we decide; and at the further end we find growths unlike any others that are produced in the body—rapidly produced, rapidly multiplying, rapidly destroying; things so unlike any that we can call local disease purely and simply that we are bound to adopt another pathology for them, or rather we are bound, as I think, to believe that in the long groups of diseases which we call cancers there may be at one end diseases in which it is hard to discern any constitutional element at all, and at the other end diseases in which the constitutional element very far predominates over anything that we can suppose to belong to locality.

If, then, I now proceed to show the grounds on which I should hold the very great importance of giving a full consideration—I will not say a dominant one, but a very full and complete consideration—to the constitutional element in the origin of cancer, it is only that I may, if possible, avert what I think may be the consequence of such a paper as Mr. De Morgan's, a paper of great weight, great clearness, and wisdom, drawn from long experience, and likely enough, therefore, to have great influence among those who read it.

Now, there are certain things in the history of cancer in which it is impossible not to discern a very large predominance of what,

for brevity's sake, I will call the constitutional element, for I presume that about the existence of two elements in the origina tion of cancer we are all very well agreed. And the first of these is the manner of its inheritance—not the mere fact of its inheritance, but the manner in which it is inherited. And I am anxious to state that I think we cannot over-estimate the importance of inheritance in the origination of cancer. The more I have seen of cancer as occurring among families whose family history is known, the larger becomes the number of cases in which well-marked inheritance can be traced. When I was engaged almost solely in hospital practice I thought the proportion was about one in six. When I came to know something more of private practice I found I could count one in four. Now I can without difficulty count, as actual facts, not less than one in three of the patients with cancer in whose families the occurrence of cancer is well known. But this number does not nearly represent what we may very safely assume to be the predominance of inheritance in cancer. A large number of persons die of internal cancer, and convey it to their offspring, though it is never known that they themselves have been the subject of cancer, or, at least, is never recorded. A large number more die before they have manifested the cancerous disposition which is in themselves; for, paradoxical as it may seem, if a man have not outlived the utmost age of man we are bound not to believe that he might not have been the subject of cancer, for cancer is eminently a disease of degeneracy, a disease of which the frequency increases as years increase—that is, in proportion to the numbers of persons living at each period of life, the number of cancer cases increases as age increases. So that unless a man, as I say, have lived to the full age of life, he may have died of some other disease than cancer and never have manifested the cancerous tendency which he yet conveys in predisposition to his offspring. The cases are very far from rare in which offspring die of cancer long before their parents. The parent lives and maintains that cancer was never known in the family; but a few years elapse and then the parent dies of the very same disease as the offspring died of, having been quite ignorant of the conveyance of the disease of which the offspring died. I am disposed to hold that it is not possible to conceive of the origin of cancer, or, I would add, of any disease of the like kind, except by inheritance. I merely state this without dwelling on it; for it is not only constitutional diseases

that are inherited, local diseases are inherited with just as much surety as constitutional ones. And I mention it only that one may be able to express strongly the very great importance of studying the inheritance of cancer as indicating its origin. Local diseases are as well inherited. The ordinary fatty tumour is often by inheritance; much more commonly the ordinary cartilaginous tumour is by inheritance; most commonly of all the ordinary cutaneous cyst of the scalp and of other parts. Malformations, to which we cannot, with the widest stretch of the term, apply the term "constitutional," are always inherited. It is, therefore, not from the mere fact of a usual, or, as I suppose, of a constant inheritance, that I would argue for the constitutional condition of cancer, but from the manner of it, for the contrast between inheritance of a local disease and inheritance of a constitutional one is very striking. When a local disease is inherited it passes from progenitor to offspring in the same tissue, if not in the same place. A malformed finger may pass from parent to offspring, but a malformed finger does not through inheritance appear as a malformed heart or a malformed brain. A cutaneous cyst may be inherited from parent to offspring, but it is in the cutaneous tissue. We do not find cutaneous cysts growing in the stomach or testes of the offspring of those that have had them on their scalp. Fatty tumours, fibrous tumours, and cartilaginous tumours, may pass by inheritance; but, as they pass, they pass from the fatty, or the fibrous, or cartilaginous tissue of the progenitor into corresponding tissues of the offspring. And it is a rule to which, I suppose, no fair exception can be made, that the transmission of a local disease is of a disease from the same tissue, if not from the same place, in the progenitor as that in which we find it in the offspring. Now, there is no such rule of limitation in regard to the transmission of cancer. Mr. Baker published, I think, in the 'Transactions' of the Medical and Chirurgical Society, a statistical report of the cases of transmission by inheritance of cancer amongst my manuscript cases, which he had the opportunity of looking over. About half of them passed from the progenitor to the offspring as cancers affecting the same organ; but this is the half affecting almost exclusively the uterus and the breast, respecting the tendencies of which to cancer I will speak hereafter. In the other half, which are the more characteristic in this respect, there is no rule at all. The cancer of the breast in the parent appears as cancer of the lip in the child; the

cancer of the cheek in the parent becomes cancer of the bone in the child; there is in these cases absolutely no relation at all of place or texture. And it is but fair to mention one striking instance, which has come within my own knowledge, of total disregard of all locality, of all tissue, in the transmission of cancer from parent to offspring. A lady died with cancer of the stomach, one of her daughters died with cancer of the stomach, another died with cancer of the breast; and of her grandchildren, two died of cancer of the breast, two of cancer of the uterus, one of cancer of the bladder, one of cancer of the axillary glands, one of cancer of the stomach, one of cancer of the rectum. Now, it seems to me inconceivable that we can here speak of the transmission of anything local. That which was transmitted in this case must have been something which we are bound to call constitutional, and of which the locality in each person was determined by some other circumstance than that of the inheritance.

And herein the transmission of cancer accords with the transmission of all other hereditary constitutional diseases—with gout, with syphilis, with tuberculosis, with scrofula. And here I may mention that I think it will be well if we study the whole matter of the pathology of cancer, not by its accordance with certain verbal definitions of our own, but in its relations with those diseases which we are all of us ready to admit to be either constitutional or local. I assume that we are all of us quite ready to admit that gout and syphilis and tuberculosis and scrofula are constitutional diseases; and I say the transmission of cancer by inheritance accords perfectly with what we see in them, not with what we see in local diseases. The gout of the parent may appear in all the various textures of his offspring; never, it may be, in the great toe of one of them, but in the joint of one, in the skin of another, the bronchial tubes of another, the pulmonary textures of another. Of all the variety of diseases which we class under the general name of gout the whole may be derived from one parent who may have gout in what we regard its typical form. And I need not here speak of the varieties of form in which tuberculosis is propagated by inheritance, or scrofula, or any of those others which we regard as constitutional diseases. This fact, I repeat, in regard to the transmission of a disease by inheritance, is so all important in respect to what we call its origin that I think it is to be regretted if we deviate in the least from holding that the constitutional element of

the origin of cancer is one of the most important and considerable things we have to study.

Next, if we watch the effects of injury in the production of cancer, we see very notably the same rule as in the production of others which we call constitutional diseases. Cancer, like other that we call constitutional diseases, sometimes appears, as the expression is, of itself; there is so little apparent provocation of it that we trace nothing that we can call an exciting cause. But in a large number of cases it follows injury; and sometimes it follows so quickly, in the course of a week or so after the injury, that it is impossible to disconnect it from the changes which the injury has produced. Now, we know very well, as well as we know anything in pathology, what is the limit of changes of structure which can be produced by injury in any person of sound constitution. The ordinary processes of repair, and the ordinary changes into which they may deviate without any constitutional condition being present, are as well known as are the ordinary changes of nutrition. Either there is a complete clearing up without change of texture, or there is some inflammatory formation, some thickening, some hardening, some overgrowth of some texture like to the natural textures of the body, or, at the most, the production of some tumour which increases and grows on the place of injury, but holds the character of the texture in which it is seated. And when after injury there is a deviation from these ordinary changes we seldom or never entertain a question but that the deviation is due to some constitutional defect in the person in whom it occurs. We see a wrenched knee-joint which does not recover after the ordinary fashion, which swells and remains hot, with thickening of the synovial membrane, perhaps with the formation of abscess. We are as sure as of anything in pathology that this is because the person is scrofulous. We see an injury of a bone and it becomes the seat of tuberculous deposit. We understand that this is because the person to whom the injury has happened is one with a constitutional tuberculosis. We see an injury done to the foot and it becomes the seat of a gouty inflammation; another done to joint or bone and it becomes the seat of syphilitic disease. In all of these cases our pathology may be erroneous, but at least it is as certain as any pathological knowledge that we have, that a deviation from the ordinary method of change after injury is because of some constitutional peculiarity in the person upon whom the injury has

been inflicted. Now, it is only a reading of the same facts with altered terms which enables us to say that when a cancer comes after an injury inflicted upon a part it is because there was a constitutional predisposition to cancer in the patient. I cannot conceive that we should have any other method of reading the fact than by assuming that here the cancerous disease follows the same law as we find in so large a number of instances in other constitutional diseases, and that the ordinary consequences of the effects of injury are deviated from because of a constitutional peculiarity in the person on whom the injury has fallen.

And this case is made very strong in some of those instances in which injury has fallen upon persons in whom we know of cancerous inheritance. How otherwise can we read the fact, which is by no means rare, that a cancerous mother has a son whose lip is incessantly irritated and the lip becomes cancerous? There is here no transmission of a local peculiarity, but transmission of something constitutional, which is brought out by a local injury. Therefore, I would hold, as a second reason for maintaining in its fullest force the power of the constitutional element in cancer, that the production of cancer by injury is according to exactly the same rules as those by which we hold generally that when the ordinary effects of injury are in any degree deviated from it is because of some constitutional peculiarity of the person on whom the injury has been inflicted.

Next I would hold that the constitutional element in the origin of cancer is strongly marked in the constancy and in the method of its recurrence after operations—recurrence after complete excision. Mr. De Morgan speaks of the "almost constant." Well, I do not know what percentage "almost" means, but I will venture to say, speaking of ordinary typical cancer of the breast, or any other part which is its most frequent seat, that the number of cases in which it does not recur is not more than one in five hundred. And the exception of one in five hundred may very well exist without any imputation on a general doctrine of a constitutional origin of cancer; for in one person in five hundred it may very well be that there is only one piece of the body which can possibly become the seat of a constitutional disease, and that piece being cut out no more remains; or it may be that in one person in five hundred a constitutional predisposition to the disease is, as we may say, exhausted by the production of a single growth or a single set of germs of growth. We do not think that a disease has been less scrofulous, because, after the

amputation of the scrofulous limb, the person may have shown no more very marked signs of scrofula; or not syphilitic because, after the occurrence of a syphilitic sore, the appearance of syphilitic constitution may cease. However, the point is not so much here in the fact of an almost constancy, say one in five hundred, in which cancer is not reproduced after operations, as in the contrast between cancer and other tumours. For if the cases in which cancer is not reproduced in some form are not more than one in five hundred, then I would add that the ordinary non-cancerous tumours do not reappear in more than one case in five hundred. The case on the one side is as strong as the case on the other; one cancer in five hundred may fail in reproduction, but not more than one in five hundred non-cancerous tumours succeeds, if I may say so, in reproduction after removal. And here I may venture to say our own 'Transactions' are liable to lead to fallacies. We get all the records of strange things, all in which fatty tumours, for instance, are reproduced, but none of the hundreds of cases in which they are not reproduced.

Now, suppose that these were, as in one sense they are, vivisections. Suppose a man to have performed five hundred vivisections, to determine such a point as this—whether a certain mass within the body is altogether local or for the most part constitutional; and suppose he has found that, after five hundred vivisections, he has got but one single exception to the rule that the growth reappears after removal. He would be a bold man if he repeated his vivisections; he would be surely content with his results, especially if he took, in contrast, five hundred cases more of different growths and found that they did not reappear; he would surely be content to put aside the apparent exception for further consideration. He would not use those exceptions to overthrow the doctrine which he had founded upon the rule, a doctrine of constitutional disease, which would be as safe for these growths as it would be for gout, or tuberculosis, or syphilis, or any other that we are content to call constitutional.

But not only is this so in regard to the mere fact of reproduction, but in the method of it the contrast is also very striking. There are certain instances in which tumours that we must not call cancerous do reappear in distant parts. These are, however, exceedingly few. The very large majority of the so-called recurrent tumours, tumours which seem to stand in the mid distance between the cancerous and the non-cancerous, reappear again time after

time; they cannot be extirpated except by complete removal, not merely of the tissue, but of the part, of the whole part, in which they grow. Now, this contrast is really a striking one. I once removed from a healthy, full-blooded young woman, one in whom cancer would have had its most florid course, the eighteenth tumour which had grown in her within the course of six or seven years. The tumours grew in the intermuscular spaces of the thigh; and I removed the eighteenth, and if she had not died of pyæmia it seemed as if there might have been a thirty-eighth or a fifty-eighth. There seemed absolutely no limit to the number of times in which the recurrent tumour might be produced in the same part. If the limb had been amputated I think it very likely she would have had no return at all, but whether it be so or not I venture to say there is not in the whole history of the surgery of cancers a case parallel to this, not a single case in which a large cancerous mass was removed from the same part eighteen, or I would venture to say eight, times without the production of similar disease in the lymphatics and in the other organs. In another case I removed a tumour for the seventh time, and then its return was destructive. A third and fourth time are frequent. Now, these things have not their likenesses at all in the cases of cancer. You may cut out little cancerous tubercles here and there from some old person, three, four, five, or six times over, but that is a different disease. You cannot find an instance of rapidly growing, soft-textured, vascular cancer of any form which can be removed three, four, six, eight, ten, or twenty times without recurrence, not in the place of growth alone, but in distant organs; and I believe it is vain to attempt to explain this difference of the recurrence in distant and dissimilar parts which we find in recurrent tumours, or occasionally in the more ordinary kinds, upon any facts of difference of physical condition. I observe it is referred to the mobility of cells, to their readiness to travel, that now and then these tumours pass from one part to the other. Now, really there are cancers that multiply themselves in distant and dissimilar parts whose physical condition looks as unfit for travelling as any that could be named. If I could name any kind of cancer which propagates itself more widely and readily than another it would be the osteoid, a mass as hard as any mass of fibrous tissue you ever found in the uterus. I know no fibrous tumour which is so hard as the fibrous mass, to say nothing of the bony structure of an osteoid cancer, yet it propagates itself speedily and

everywhere. Ordinary scirrhous cancer of the breast is at least as hard as an ordinary fibrous tumour; but the one does what the other does not—propagate itself. The recurrent fibroid or recurrent cartilaginous growths are just as soft, and are composed of cells and free nuclei as little held together as in any of the softest forms of cancer. They do not, except in rare cases, propagate themselves. Cancers do not fail, except in rare cases, to propagate themselves, so that I must maintain that, whichever way we look at them, the facts of the method of propagation to distant and dissimilar parts are so strong and so characteristic on the side of cancers that we must assume an essential difference between them and any other tumours that we can name.

These are the chief grounds which impress me very strongly with the belief that we shall be committing a great error if we depreciate, in the least degree, the constitutional element in the production of cancer. I only fear lest in thus maintaining the importance of the constitutional element I should seem to have endeavoured to depreciate the local. My anxiety would rather be to hold that in all cases both exist, but that in different cases the one or the other is predominant. If I must hold either to be the more important of the two, I should believe that the constitutional is the more important in as much as it is that which predominates most in the largest portion of cancers, in those, therefore, which we may best take as indicating the type of the disease.

On these grounds, then, I should hold, not unwillingly, not grudgingly, not as if I would depreciate it, the very great importance of the constitutional element in the production of cancer.

But then it is said, it may be constitutional, but it is not a blood disease; and I have no right, if I assume it to be constitutional, therefore to assume that there must be a morbid material present in the blood which incorporates itself in any form in the structure of a cancer. Well, I am quite ready to admit that this is a very much less important matter than the other. The question of first importance is whether cancer does owe its origin to a constitutional as well as to a local condition; whether that constitutional condition be a morbid material in the blood or not, is an altogether different question, and does not much affect the main one. Nevertheless, I am prepared to hold that by all the analogies of other constitutional diseases we do well if we hold that cancer also has a special material in the blood to which it owes a part, not the whole, of its origin.

For if we are to hold constitutional diseases to be, as Mr. De Morgan says, and as I would say, "all pervading," what is it in which all pervades? There are not many things which do all-pervade the body. We have the nerves; we can hardly ascribe the constitutional origin of cancer to any morbid condition of the nervous system. That seems, to say the least, very improbable. We have the minute blood-vessels; we have, we might almost say, the organic muscular fibre; we have the connective tissue; we have the blood; and having named those things we are at a loss to name anything else in which the all-pervading condition can exist. We cannot talk of conditions separate from the materials in which the conditions exist. We may doubt whether it be a fluid, or a germ of any degree of minuteness, but, at least, it must be something material; and if it be so, where is the material? In which of these all-pervading substances? Well, I can conceive that it might be in the all-pervading connective tissue; but it seems to me more probable and a safer thing to hold that it is in the all-pervading blood, because at any rate we can then hold to our study by some sort of analogy with things that we recognise as being blood diseases. We have some blood diseases that we are sure of. So far as I know, we have no all-pervading connective tissue diseases of which we have any knowledge at all; so that if we hold that the constitutional condition of cancer is not in the blood, we drift away into the land of the unknowable; an excellent land, it may be, to drift to, for all the most inquiring spirits would immediately proceed to find out what there is in that unknowable. But, at least, we have a set of diseases of which we know something as being blood diseases, and it is with them that the likenesses of cancer are found. As, for example, I presume it may be held very fairly that senile diabetes is, if not originally, yet at length, and in great part, a blood disease; there is a morbid state of the blood in that disease. Except in that it produces a permanent growth instead of a temporary change of texture, the production of a cancer from supposed morbid blood is hardly more strange than the production of a carbuncle out of diabetic blood. The occurrence of boils and carbuncles and other local necroses is as singular an indication of the disturbed blood of diabetes, as is a cancer of any supposed disturbance of the blood that we may speak of. Uræmia, with all the local diseases it may produce; scurvy; and the various diatheses which are marked by morbid conditions of the urine—these we all

know to be blood diseases with appropriate local manifestations.

But it is said that if it be a blood disease, there are certain conditions observed in cancers which cannot be understood, and Mr. De Morgan names many of these. I have looked carefully through them, and it seems to me that the objections which are taken to the assuming that cancer is a blood disease, on account of these conditions, would apply with just as much force to any other blood disease that could be named. It is said, for example, that we can hardly conceive how cancer should be produced if it be in the first instance in the blood, and yet the whole condition of the cancerous person should be one of perfect health. Why, this is surely exactly the same fact as that of a man on the very eve of an outbreak of gout. Few men feel themselves fitter for either work or play than the men whose blood is so near to an explosion of gout that it may appear in a few days afterwards. In the long intervals which exist between one attack of tertiary syphilis and another there can be no reasonable imputation on the health of the person; all in him seems sound, yet there is something at work which will again appear in syphilis. In the intervals of scrofula there is not much to be said against the health of the person; so that the fact of good general health being coexistent with cancerous manifestation in a single part is really no more an argument against the belief in a cancerous condition of the blood than it is in the case of syphilis, tuberculosis, scrofula, or gout.

Again, it is said that you often observe in cancerous persons that injuries are inflicted upon them and no cancerous change ensues. Here, again, the same thing may be held. Study the same fact in the light of other constitutional diseases, and the same strangeness appears. I have seen several cases in which a day after operation the patient had an outburst of gout. I never saw a case in which the wound was hindered from healing except in so far as it might be hindered a day or two by the feverish condition which attended the gout. The existence of gouty blood is quite consistent with perfection of repair, whether of wounds or of any other injury.

Again, it is said, how can we explain the long interval of health which exists between the removal of a cancer and the reappearance of another, if we are to assume that there is a morbid condition of the blood? Again, I repeat, the same thing exactly, strange as it may seem, prevails in all other constitutional diseases. How can

we explain the long intervals between the successive appearances of secondary or tertiary syphilis? How can we explain the long intervals between the outbreaks of gout or tuberculosis, or, as I would venture to say, of anything else that we call constitutional disease?

And another objection is that it is inexplicable that, if there be a morbid condition of the blood, cancer should not affect secondarily the parts which are its most ordinary seats primarily. Again the same reply presents itself. Secondary syphilis does not attack the prepuce or glans penis more often than any other part. Tertiary syphilis may attack the skin, but it is more likely, or as likely, to attack a bone or joint. I repeat the whole of these objections which are raised—and I venture to assume that, with Mr. De Morgan's learning and ingenuity, he has raised all that can be raised—may be applied just as well as objections to the belief in any blood disease whatever, as to the belief that cancer may, in some sense, however vaguely, be called a blood disease. And the last objection I note is, how is it that, if there be morbid blood in cancer, the disease should be more frequent in the female than in the male? Well, this is easily answered. Cancer, as I have already said, is eminently a disease of degenerated tissues. We are wholly misled if we suppose that cancer is a disease of healthy persons. Whether by local degeneracy or general, it is essentially a disease of degeneracy. As I have already said, it increases in frequency, in proportion to the number of persons living, as age goes on. And the apparent exception to this rule is the very exception that proves the rule; for there are in women, without any correspondences in men, two organs which enter into a degeneracy closely corresponding with the senile at a comparatively early period of life, namely, the breast and the uterus; and it is the predominance of cancer in the breast and uterus that alone makes the greater frequency of cancer in the female than in the male. If we separate the cases of cancer of the breast and the uterus, then cancer is more frequent in the male than in the female; but because these two organs cease to be capable of function and enter, say at forty or fifty or thereabouts, into a condition similar to senile degeneracy, therefore there is a rapid increase in the frequency of cancer at that particular age. But the breast and uterus of women at fifty should be compared, not with any organs of men at fifty, but with organs of men at seventy, eighty, or ninety. These organs in the women are already in a condition which we may closely compare with senile degeneracy; therefore

they are more early, and therefore more frequently, the seats of the disease. It is solely this local degeneracy in women that makes them disposed to cancer long before it would be likely to happen to men. I must therefore maintain that all the grounds against holding that cancer is a constitutional disease, and dependent on a morbid condition of blood, will hold as strongly. I do not say they are altogether fallacies, but they will hold as strongly against any belief in any disease whatever being a blood disease.

I am ashamed, sir, to have occupied the Society so long, but if you will allow me, there is one more point on which I will speak. Pathology, I think, of all studies would be the most repulsive if it were not for some hope of utility coming out of it; and I noticed in the discussion last time that it was said our best hope of the remedy of cancer is in holding that it is a local disease. Now, I venture to hold the very opposite of that. We have failed in hundreds and thousands of cases; for years, for centuries past, we have failed to cure cancer as a local disease. Every excision of cancer followed by return is a failure; even the largest, the roughest, attempts to cure it as a local disease. If we can have any hope at all of curing cancer it must be in the study of it as a constitutional disease, for, so far as therapeutics yet have proceeded, nearly the whole power of therapeutics is that of constitutional remedies against constitutional diseases. If I look, and I do look, for a hope of recovery from cancer it is in such a fact as this, that we have a clear remedy for syphilis, a remedy as distant in all conceivable relations from the disease of syphilis as any one part of the world is from another; and moreover, that that remedy is of avail, not merely for the existing disease of syphilis in the person first inoculated, but for the like disease in the offspring. What can we conceive as passing from a male parent to a child to produce in him syphilis? Well, what passes is entirely inconceivable—some material; but whatever that material may be, it is alterable, in our plain sense curable, by the same remedy as would have cured it in the parent. Therefore, I repeat if there be a hope, it is that by the earnest constant study of the constitutional character of cancers, there may some day come to us a remedy as little expected as mercury must have been before it was introduced for syphilis, but which not less surely than mercury may be the cure, even of inherited disease; for mercury clearly cures the inherited disease of syphilis to a first and even to a second generation.

Mr. Arnott.—I am afraid, sir, that the eloquence of Sir James Paget has, for the present, deprived us of the pleasure of hearing many of the speakers whom we expected to hear to-night upon this important subject; therefore, I, as one of the junior officers of the Society, feel that it is incumbent upon either myself or the medical secretary to fill the gap whilst others, far more fitted to speak upon the subject, from their greater experience and their greater learning, are gaining time to consider what they shall say in reply (as I venture to trust) to Sir James Paget, or it may be in confirmation of what he has laid before us. But it has seemed to me, sir, in listening to the wonderfully lucid speech of Sir James Paget this evening, as also in reading the no less, as it appeared to me, able address of Mr. De Morgan in the papers of last week (for it was my misfortune not to hear that address), that the subject is so very vast, and the many points which have been brought before us by these eminent speakers have, some of them at all events, been so embarrassing, from the almost necessary confusion between observation and hypothesis, that it is almost impossible for us to hope to gain very much more by such a debate as this than to come to some tolerably clear agreement upon some one point that has been raised. And what has struck me very much this evening has been the fact which Sir James Paget pointed out, but which, I confess, had not struck me in reading Mr. De Morgan's paper—that those who apparently hold the local origin of cancer as distinct from its constitutional origin and nature, really, at the same time, admit to so large an extent the part played by the constitution, that Sir James Paget was able to quote, in opening his speech this evening, some sentences of Mr. De Morgan's address, and to say that he entirely agreed with those observations; and he then proceeded, in his own eloquent and quite unique manner, to enunciate with still greater clearness how his views, which had, I confess, seemed to me to be opposed to Mr. De Morgan's, really coincided in the main with what Mr. De Morgan had laid down. I fancy, therefore, that one must admit, in starting, some great part played by the constitution in the production of cancer; but I confess that, although I have been much shaken by what Sir James Paget has put before us, I have not been convinced by all his arguments. We must all be grateful to him for informing us of the very much higher ratio of cases than we formerly recognised, in which the hereditary transmission of cancer is an undoubted fact. Hitherto, of course, I have only been able to

observe hospital patients with reference to this point; I have, therefore, suffered from the drawback which Sir James Paget suffered from in his younger days, of not being able to get very clear evidences of the former family history of patients suffering from cancer; and I confess I had come to the conclusion that many of my seniors had rather overstated their case—that they had made rather more of the inherited nature of cancer than the facts warranted us in accepting. But, granting all that Sir James Paget has told us of the clear inheritance of cancer, it does seem to me that that does not throw very much light on the question. He himself admitted that local diseases were inherited as well as constitutional; that fatty tumours, cartilaginous tumours, and especially cutaneous cysts, were as often clearly transmitted from parent to offspring through several generations as the most virulent cancers; but he drew a very important distinction; he pointed out that it was in the *manner* rather than in the *fact* of the inheritance that the constitutional nature of cancer was especially striking.

In following closely what Sir James Paget was saying upon the subject, it seemed to me that, if one had time, even five minutes, to consider it, and to think of the cases one had seen and the observations one had read in the works of others, one might meet some of the remarks of Sir James Paget on this point. I think, for instance, that one explanation of the alteration in the manner of inheritance between cancer and other tumours is this, that the other tumours (in which group, I suppose, Sir James Paget would include almost only fatty, bony, and cartilaginous tumours and some cysts which are not now generally spoken of as tumours in the sense of new cell-growths) are, for the most part, hypertrophies of a single tissue. They are not heterologous formations; their structure is very different. For instance, the mother of a number of children has a cancer in her breast; that cancer might appear on any other part of her body; it might appear, for aught we know—although certain investigations proceeding in Germany may correct us on this point—in muscle, in bone, or in any other part of the body. Accordingly, if the mother transmit this tumour taint, this taint of scirrhus, to her offspring, it might show itself in some other part of the body. But, if the mother had a fatty tumour, if she had an ordinary lipoma, she could, so far as our knowledge of pathology goes in these matters, only transmit that tumour to her offspring in such sort that the child should have

lipoma in the same tissue. I do not say in the same part. I observed that Sir James Paget did not insist upon the same part being affected, although it may possibly be so in a certain number of cases. But it would be in the same tissue. So with a bone tumour, and so with a cartilaginous tumour. In another very striking part of Sir James Paget's speech, he asked us pointedly why we do not find a local recurrence in cancer, as we do in those tumours which he first, in England, pointed out to us as recurrent tumours—tumours which we, of the younger school, are beginning now to call sarcoma. Here, I think, the histologists might come to our rescue, and help us with a ready answer. Sir James Paget said, "It is not anything in the physical attributes of the tumour; for what propagates itself so widely as osteoid cancer, which is one of the hardest lumps we meet with in the body, in the way of new growth? What propagates itself so constantly and diffusely as scirrhus of the breast, one of the hardest tumours in the body?" But it seems to me that that is hardly the point. It is not the gross hardness or softness of a tumour, although I believe that has a large share in the diffusibility of a tumour throughout the body, but it is the distribution of the elements of the tumour. In saying this, I feel great diffidence, because I am reminded at this moment that, in making this observation, I am also at issue with Mr. Simon, for he, too, seemed to me to somewhat underrate the value and importance of the mobility of the elements of a tumour. If I remember rightly the report of his speech, he called it the *accidental mobility* of the elements of new growth. I may, perhaps, be permitted to illustrate what I mean by some rough sketches on the black board with reference to this point. When we find, as I think we do for the most part, that the mobility of the elements of a tumour stands in direct ratio to its malignancy, other conditions being the same (setting aside for a moment the consideration of constitutional disposition), I think the observation is one of the greatest importance, and we should not lightly pass it by. In this sketch, which roughly represents a section of a scirrhous carcinoma of the breast (correctly described by Sir James Paget as one of the hardest growths met with in the body), it will be seen that, in the alveolated fibrous stroma, the cells are lying perfectly loose and detached from one another, floating in clear fluid, therefore liable at any moment to be hurried off by a lymph-steam or blood-stream, or through connective tissue, to other parts of the body; whereas, in this other tumour,

a chronic mammary tumour, in which a somewhat similar arrangement of elements is seen, viz. a fibrous stroma with included spaces filled with cells, the cells are not epitheloid, but epithelial; they are, therefore, in close contact with one another, not easily detached and hurried away. In the cancer of infants, that cancer which is only met with in young children, glioma of the eyeball, the small round-celled sarcoma, the cells are found to be united by only a very diffluent creamy fluid; they are, therefore, liable to be detached and hurried to distant parts, to grow widely, and insinuate themselves into the interstices surrounding the tissues; and accordingly we find that, according to one of the best monographs upon glioma recently issued from the German press, glioma is, of all tumours, one of the most malignant, there being only four or five cases in the whole history of gliomata that have escaped death. In spindle-cell sarcoma, the recurrent tumour, or something like it, of Sir James Paget, the cells are bound together—it is true not very firmly—by a sort of grumous intercellular material; therefore, we do not find the spindle-cell sarcoma nearly so malignant as cancer; never affecting the lymphatic glands, seldom affecting distant parts of the body. So with other tumours. Epithelioma, for instance, which is nearly as malignant in some cases as cancer, for the most part is not so malignant, and here also, for the most part, we find that the elements are not capable of being hurried away; they are epithelial elements, and one of their chief attributes is, that they stick closely together, as do the epithelial elements of healthy skin. With regard to rodent ulcer, until the speech of Sir James Paget to-night, I have been led to regard it as a form of epithelioma, but I must now reconsider that point. In some dissections that I had made, it seemed to me that rodent ulcer was a form of epithelioma; for one sees, deep down, an appearance like the cells of the rete mucosum, and occasionally the bird's nest bodies; the cells are more closely coherent than in epithelioma, because they resemble more the cells of the rete mucosum, not the epidermis-cells; therefore, they have a still lower malignancy than any ordinary epithelioma. But in simple tumours, fatty tumour, fibrous tumour, and the like, there is nothing in the mobility of the cells which would tend to their reproduction in other parts, or their diffusion throughout the body. Therefore, it seems to me that, although histologists may, as Mr. Jonathan Hutchinson seemed to indicate, have taken too prominent a part lately in the discussion of the theories of cancer,

we have much yet to learn in the pathology of cancer by having regard to the minute structure of tumours rather than their gross characters. And, if I may be permitted to refer for a moment to one other point, it will be this: the *position* of tumours affects, to a large extent, their malignancy. Where one cannot explain malignancy by referring to the anatomical characters, I think one may explain a great number of cases by having regard to their position. I have dwelt upon this point elsewhere, and I do not wish to be tedious by a recapitulation to-night; but I will briefly say that such observations as I have been able to make upon this point have shown me, I think with tolerable clearness, that, other things being the same, much of the malignancy of certain tumours may be explained by their position, and that, in proportion as that position is subjected to the conditions of warmth, of moisture, of great vascular supply, of free lymphatic connections, and of occasional exalted functional activity, do we find that the tumour is likely to be malignant. In other words, epithelioma may attack the forehead, the bridge of the nose, or the cheek, and remain there a quiet, indolent, passive sore, ulcerating its way, still making very little progress, not affecting distant parts for a period of years; but let the same disease, almost histologically the same, the same in its grosser characters, attack such a position as the frænum of the tongue or the floor of the mouth or the os uteri, a part which is warm and moist, and has free vascular and lymphatic connections and occasional great functional activity—let it attack a part of this sort, and we have speedily, almost within a year, the death of the patient, and with, too, an affection of the lymphatic glands in the neighbourhood, and possibly deposits of the same epithelium in distant parts of the body. I think, if we can come out of this discussion with one fact only well settled, we shall have done something. Admitting, to the full, that there is a constitutional something underlying the local appearances of cancers, we must admit, at the same time, for Sir James Paget himself permits us to do so, that there is a similar, or a somewhat analogous constitutional something underlying the simplest tumour; and if, by bearing this fact in mind, and taking into consideration with it the anatomical peculiarities of tumours, we are able to say that such a one should be malignant because of its anatomical peculiarities, or its position, and that another will be innocent because of its anatomical peculiarities and position, then, I think, we need not be driven to

search for any hypothesis of a blood disease in the sense of syphilis or gout.

Sir W. Gull.—I only wish, sir, that I had Sir James Paget's power of exposition, because, if I had, I think I should be able largely to demolish the charming structure which he has set before us of the constitutional origin of cancer. If we consider for a moment, and analyse the word "constitution," we shall find that it has two different meanings—a meaning with which, I think, we all agree, and a meaning with which we disagree. I take it that, when Sir James Paget contends for the constitutional origin of cancer from its hereditary tendency, he must refer to some condition of the ovum or spermatic fluid, or the two together, which, whether conceivable or inconceivable, exists. If we carry our minds to the very beginning of the impregnated ovum, and say that the mother or the father is to convey to the ovum a cancerous tendency, that must lie outside the blood, for there is no blood then or there; therefore, the constitutional question must have relation to the constituents of the ovum at that time. Now, if we consider how this ovum develops, how, to use the technical expression, it "differentiates" into the various organs of the body—that is, that they form—then, I take it, we must at least trace this constitutional condition to a local seat. The ovum is differentiated into the various textures of the body, and is exhausted, if I may so say, in the formation of the organs. I think we are bound to admit that where the parents, on one side or the other, have had cancer, it is apt to appear in the offspring; yet we are bound by the laws of all scientific inquiry to believe in localisation somewhere. As the lawyers say, *latet dolus in generalibus*. Here, I think, is the mistake. We have hold of a general expression in the word "constitution," which may be true enough in the ovum, but ceases to be true in the adult, because then we can realise the conditions of localisation in the various tissues of the body. If there be one physical fact in the history of cancer more distinct than another, it is this, that certain of the organs are much more liable to it than others; instance the female breast or the os uteri. Admitting all that can be said about the constitutional origin, there are undoubtedly local seats of cancer. I ask the constitutional theorists to tell us why cancer should not appear in every part of the intestinal tract, or why there should

be certain portions of the intestinal tract which it especially and peculiarly affects. There are certain points which we know it will affect—the lower end of the œsophagus, the pyloric end of the stomach, the duodenum ; then we get over twenty feet or more of intestine which, though equally vascular, it does not affect, except secondarily. There are very few primary cancerous ulcers of the jejunum ; they now and then occur, but so rarely, that Sir James Paget puts them at one in five hundred (?), and, perhaps, they are rather more rare than that. I can only remember one case of cancer of the jejunum, and that was from contact with a cancerous part.

The great fact remains, that cancer does show a predisposition to appear in special parts. Therefore, while I fully admit the constitutional predisposition, I can only admit it fully when I have to do with an undifferentiated ovum. So soon as that ovum is differentiated into tissues, then I say that what is called a constitutional condition becomes a local one. I cannot but think that, if we could discover the first beginning of cancerous change, and could take away the part, we should, for the time at least, rid our patients of the cancerous tendency. My own belief is that, when we talk of blood disease, we are for the most part lost in conjecture ; when we begin to explain blood diseases by reference to such a disease as gout, we are still more lost in conjecture. For there seems to me no proof whatever that gout is a blood disease, nor, indeed, that typhoid fever even is a blood disease. The blood may be a channel of disease whereby certain poisons may affect the textures ; but assuming, if it were conceivable, a man should be all blood, he would not have typhoid fever, and he would not have gout. It is the textures which lie outside his blood that are the seat of those conditions which we call gout and typhoid fever. The blood is a largely indifferent fluid ; it has elements which are not indifferent, viz. the red and white cells ; but excepting these, blood is probably a singularly indifferent fluid to disease. Therefore, although I am not in the least able to supply all the steps of the reasoning, or adduce all the facts by which, perhaps, my mind would be influenced, I cannot but think that the question of constitution requires reconsideration ; and that even syphilis, as a constitutional disease, may very much be reconsidered. Take the case of hydrophobia. I once saw a man (and the practice of medicine supplies us with many such instances) who was bitten by a mad dog thirteen years before he died of hydrophobia. Where

did the poison lie? Not in his constitution, I take it, if you mean by constitution *in the blood*, floating about anywhere and everywhere. I think it lay in the tissue that was bitten—that the poison lay there latent, producing but little effect till a certain time, when changes (this is hypothetical) came over the poisoned tissue and infected the system, causing death within thirty-six hours. I can hardly conceive it possible for the poison to have been floating about thirteen years, and then to have infected the system so suddenly as to carry off the man in thirty-six hours. I think it must have been lying in the bitten tissues. I think, in dealing with malignant disease, we may regard it as a local condition of the affected tissues, however much the local development of it may have had to do with some inherited predisposition which may properly be termed constitutional. With regard to the change that takes place, we have been told that it is a cell-change. But perhaps it is not a cell-change. Perhaps it is the fluid outside the cells. Who knows? A cell is an organism of enormous extent; it is only from our sight being so feeble that we look upon it as so small. The germ of cancer may be infinitely more delicate than those larger things we see under the microscope, even though they be barely visible by a lens of but the fiftieth of an inch focus I was therefore a little surprised at my friend Sir James Paget, when he referred to osteoid and scirrhous tumours, thinking that their hardness might be a kind of obstacle to their infecting the body so readily. Endosmoses and exosmoses may act in places and parts in a manner that we know nothing of. Besides this, as Mr. Arnott has said, very much depends upon the place in which tumours are situated. It is notorious that affections of the bone where the veins are large, and where there is a peculiar condition of them, are very prone to spread. We know that abscess in bones is commonly attended by secondary abscess. Hardness alone would not do much; we must regard the accidental conditions of the situation of the part as well. The practical treatment of cancer by local operation can only refer to removable parts. If I am to become the victim of internal cancer, I hope it might be in the retina, because the defective vision would make it early known; the eye would be extracted, and there would be a chance of longer immunity from the disease. Clinical medicine shows that cases of operation on the eye have a longer interval from secondary cancer than cases of operation elsewhere. I think this a highly suggestive fact.

Dr. Squire.—I think the arguments of Sir William Gull against cancer being a general disease are just those that tend in the opposite direction. Both the facts as regard cancer, and the illustrations from hydrophobia afford striking points of comparison between cancer and general diseases. A characteristic of general disease is that it affects particular organs and tissues. We know that scarlet fever will affect serous membranes and the kidneys, missing the lungs; measles affects the lungs and mucous membranes, missing the kidneys. Inoculated poisons must multiply in the fluids of the tissue where they are inserted before they get into the blood; these fluids are derived from the blood, and must be taken into it again; so that, as to the question of blood disease and local disease, it has often occurred to me that we forget that at any one time one half of the blood is outside the vessels, and that the fluid in the tissues is probably equal in bulk to the fluid of the blood, an interchange going on constantly between them. That consideration merges much of the differences which arise. No doubt in the case of hydrophobia the poison must remain in the tissue all that time inoperative, at length reinfecting the blood. The difference in the incubation periods points, not to any difference in the mode in which the poison acts when once it infects the circulation, but to the length of time that interposes before it has got there. It was remarked by Dr. Livingstone, that about a year after he received the severe bite of a lion, some symptoms recurred, and again in the following year. Dr. Mead relates the case of a lady who, after being bitten in the finger by a mad dog, suffered pains from the bitten part to the shoulder, recurring every month, and lasting three days; fifteen months afterwards she had hydrophobia, and died on the third day.

The usual incubation period for rabies is six weeks; half the thirty cases collected by Dr. Gregory were very close upon this time. One recorded by Mr. Gray in 'Duncan's Commentaries,' vol. xii, was only three weeks; it is remarkable that the shortest period of incubation for rabies should correspond with the longest for mumps and measles, just as the shortest period for measles corresponds with the longest for scarlet fever.

Dr. Payne.—I should not have risen at this late hour were it not that I should wish to suggest, after the able exposition we have heard of the two different sides of this important question, that the discussion could hardly be carried much farther without a clearer

understanding as to the meaning of the terms which are employed. I do not think that the various speakers—Sir James Paget, Sir William Gull, and others—have used the terms "constitutional" and "local" precisely in the same sense. Nor do I think that the term "cancer" is one which is perfectly clearly understood. I should be sorry to go at this hour into any lengthened discussion of the meaning of either of these words. But I presume one great element in the meaning of the word "constitutional" is this—a lesion or change in which the general disposition of the body has a very large share, and the influence of external cause, injury, irritation, and so on, has a comparatively small share; but between these cases, in which the internal causes appear to account for everything, and those common diseases, such as cold, pneumonia, inflammation of all kinds in which the external causes appear to account for everything, there are infinite gradations. This is one sense at least in which the term might be used, and it covers both those constitutional diseases which are acquired and those which are inherited or congenital. If a person has, for instance, received into his body the poison of syphilis, or has inherited the predisposition to scrofulous disease, any injuries or irritations to which he is exposed will produce a different result to what they would produce in the case of a healthy person. We speak of the diseases, syphilitic or tubercular, to which he is subject, as the result of the poison or predisposition; meaning that the general state of his body has the chief share in producing them, and external injury or irritation a small share. But if we accept this definition it will be impossible to deny the name of constitutional to many forms of simple tumours, since these are certainly due, at least in an immensely preponderating degree, to internal causes, and only in a very slight degree if at all, to external causes. Nor have I ever been able to see why, for instance, an hereditary enchondroma should not be called constitutional, as much as hereditary psoriasis or gout. I am well aware that this is not the sense in which the word has been used by Sir James Paget, who means by constitutional something in the blood unfixed to any special tissue, but still it has been so used by other speakers. They mean something innate, he means something general; and I am disposed to think that the arguments on the constitutional side have assumed a more formidable appearance than they otherwise would, partly for this reason—that under the same head are included arguments for cancer being innate, and arguments for its being general.

The definition just proposed covers also the analogies pointed out by Mr. Simon between the cancerous disease and diseases such as tubercle or syphilis, analogies which are, doubtless, very important. Mr. Simon, I imagine, spoke chiefly of general affinities, those depending on the whole course and progress of these diseases; but the comparison might, I think, be taken in a more strictly anatomical sense, by comparing the minuter peculiarities in their mode of growth, a point to which I shall refer to again.

But before passing to this point it is absolutely necessary to consider for a moment what we do mean by cancer. I imagine that by cancer has often been meant something extremely destructive, but which could not really be named until it had proved by its actual effects its destructive properties. Well, when it was found that things which had these destructive properties could sometimes be recognised at a period before these properties became visible, then, of course, it was necessary that the object should be defined by the qualities or properties which belonged to it throughout the whole of its existence, and not those which become developed after a certain time. Hence arose the endeavour after an anatomical definition, and such an anatomical definition and classification of cancers and things allied to cancers I cannot but think will always be necessary. It is, moreover, really not by any means a novelty, because it is precisely what was attempted at the very beginning of the century by Abernethy, who said he would classify tumours according to their structure. If people objected that you could not find out what their structure was till they were removed, and also that their properties constituted a more important difference, still, he said, "all you can do is to classify things as you see them by their structure or general qualities, and then make notes of the properties and dispositions which are attached to those structures;" and that is really all that we can do now; so that I think we must come to an anatomical definition of cancer.

Now, it is fortunate that with the anatomical definition is to some extent associated a certain feature of growth. I suppose that all persons up to the present time would agree in describing as cancer a growth which, whatever its minute character might be, had already begun to infect or infiltrate a neighbouring part, and this is, in fact, the definition given or accepted by Dr. Walshe in his book. But then, of course, it would not be allowable to exclude from the class any growth which did not infect, merely because it had not yet

arrived at that state, but which might do so hereafter. Yet with most external tumours that is the case. Now, what does infection or infiltration mean? I think it has a distinct anatomical meaning, which is already shown or suggested, at all events, by the diagram which Mr. Arnott has placed on the board, and it is really this—that a change, growth, or process, which began in one tissue has passed over from that into another which is adjacent and not of the same kind. For instance, the cells which Mr. Arnott represented enclosed in the alveoli of mammary scirrhus are, as we may say, far more like the cells of the gland near which they arose than are the bodies normally found in the connective tissue where they occur. And so much is that recognised that almost all observers, in describing cancers of that kind, starting from glands, have agreed in pointing out something of a glandular character, which amounts to saying that parts which were not originally glands nevertheless have become to a certain extent like them, that is to say, that some quality or mode of growth which originally belonged to one tissue has passed over to another. This is what Virchow means by an epithelial infection of connective tissue, and I imagine that anatomically one can give no better definition of cancer than that—that there is a kind of duality in its structure; that one part of the structure, looked at anatomically, is as if it came from one kind of tissue, and another part is, anatomically, what it would be if sprung from another kind of tissue. Now, this simple fact pointed out by Mr. Arnott means a great deal; it means that the disease or change has bridged over that very narrow but very important interval which separates tissues of one kind from tissues of another kind, and when it has done this it is almost as good as if it had already spread all over the body, because there is no longer in the whole course of its transmission through the body any barrier nearly so complete and difficult to cross as that. This fact, too, explains the value of old characters which are so much relied upon by surgeons, of adhesion of the skin, and other things more of the kind. It means that something which did not begin in the skin has got to the skin, and having got to the skin it may pass to any part of the body. Now, with regard to syphilis and tubercle, the mode of local infection, that is, the mode of growth, is really very similar. In both these diseases we have a passage from the original tissue to a dissimilar one, or at least two dissimilar tissues are simultaneously affected. Tubercular disease of the respiratory organs does not merely affect

the mucous membrane; even if it starts there, it always produces, as was so often mentioned in our tubercle debate, an alteration in the interstitial tissues. Syphilis, again, of the skin, seldom remains confined to the epidermis; it produces ulceration, induration, or some sign of infection of the cutis. Now, this passage from one kind of tissue to another is an anatomical fact, but still must be regarded as, in a very important sense, a constitutional fact also. It is, in truth, the very feature of malignant growth which surgeons have thought so much more characteristic than anatomical structure. But if we are right, this infective tendency, or constitutional property, is, in reality, a point of structure.

Now, of this property of infection, that is, of the anatomical fact of disease passing over from one tissue to another adjacent tissue, there are many explanations. It has been explained as a matter of simple continuous growth. It is maintained in the case of epithelioma (I confess with a great deal of reasonableness) that all that happens is this—that the skin leaves its proper site and grows inward. What makes it to do so we do not know. The same explanation is extended to other forms of cancer. There, perhaps, our ground is less sure. At all events we may say that it is at present less clearly established that this transferrence of growth does take place in the case of other tumours. Then there is another explanation, viz. that growth in one kind of tissue infects or causes a different kind of growth in the adjacent tissue, and that, which I suppose is to some extent regarded as the opinion of Virchow, who talks so much of epithelial infection, is essentially the same as was suggested at the last occasion by Mr. Simon, who said he thought the virus, or poison, which stirred up cancerous growth had something in it analogous to spermatic elements, and acted, not as a simple stimulus, but as a physiological stimulus; only he imagined that this did not necessarily reside in or was not always attached to cells, although it might originate in them. The same explanation clearly applies to tubercle and syphilis. Allied to that is another opinion, which is exceedingly plausible, but has very little solid foundation at present, that is, that there is a conjugation also comparable to genesis. But at all events in a number of cases it is clear, whatever the material may be that stirs up the new growth, that it is transmitted through the body in attachment to cells. If this account of transmission and growth of cancer be true, we have, I think, a *constitutional* theory

of cancer which deserves that name, at least as much as the experimental theory of tubercle, and as much as the known rationale of syphilis, in both of which cases something is introduced from without which, though it is a constitutional or general poison, yet at the same time is always attached to local growth, and therefore is, we must say, essentially local. It seems, then, that the poisons of syphilitic and tubercular disease are in this sense both constitutional and local, and precisely the same may be said of cancer, so that to some extent there may be a combination of the two views.

With regard to the hereditary argument I must say a few words. We owe a great deal to Sir James Paget for having disclaimed the common argument drawn from inheritance, and given to that which he himself adopts a far more definite form. Commonly it is urged that cancer must be constitutional because it is hereditary, whereas, as Sir James Paget has shown us, the inference is a just one only for a more special reason, viz. because cancer is hereditary in a particular way, namely, without being attached to any particular tissue or organ. Moles, warts, or supernumerary fingers, may be hereditary, but they are not constitutional in the sense which Sir James Paget has given to that term, though they may be so according to the definition which I ventured to suggest just now. I also wish to point out that the argument which Sir James Paget used about the prevalence of cancer in the uterus and mammæ—namely, that these are organs which, in the female sex, are subject at a comparatively early period to degeneration of the same kind as that which the whole body undergoes in both sexes at a somewhat later period—is surely in favour of the predisposing cause of cancer being a condition and property of tissue, not a property of the body as a whole, or a property of the blood, since it is certainly the tissue that is prematurely old, and not the blood.

Finally, I wish to claim on behalf of those concerned in histological inquiries a little more indulgence, or I might say more justice, than we have received from some speakers in regard to the anatomical characters of cancer. These characters are the only properties which cancers present at all periods of their career. And if these characters are extremely minute, that surely is rather the misfortune of the histologist than his fault. Until we have a precise description of the minute structure of tumours it will not be possible to construct text-books and works of reference in such a way that we can tell to what we are referring. And the clinical observer is quite as

much interested in the accuracy of text-books as the histologist, or even more so; he has even more to lose from uncertainty of reference.

Adjourned Discussion, April 7th, 1874.

Dr. Moxon.—The course of the debate hitherto, sir, has been rather surprising to me because of the sweet and pleasant general agreement that one has found pervading the atmosphere. I could only compare it, not certainly to opponents bringing forward in any form opposite views, but rather to rival painters representing the same scene, one pointing to one part and saying "This is preferable," and another indicating another corner and saying "Nay, direct your eyes here." But it was not with that impression that I approached the subject of cancer. To my mind there was something to discuss, especially as to the origin of cancer. It is true when Mr. De Morgan brought forward his very eloquent paper he did embrace views in a sort of Pantheon, if I may so speak, almost disregarding their natural oppositions and incompatibilities. I was scarcely prepared to find all the subsequent speakers equally bringing forward the opposite sides of the question, as though they could lie down together. It may be crudeness and incapacity on my part to perceive the ways in which opinions may shade into each other and become identical, however opposed, like red and blue are naturally; but to me it has always appeared that the local and the general views—localism and generalism—are essentially opposite; that they are not compatible and cannot be held by the same person at the same time. As I understand the question, it may be put in this way, Does the first cancer that appears in the patient's body generate the cancers which appear afterwards? Does it precede them in every way? Or, on the other hand, is there a general state of the whole system which is ready to put out cancer anywhere, and puts out the first in the same way as it afterwards puts out the second and third? It seems to me that no one can hold those two views at the same time; one of them excludes the other. But then it might be that that opposition, although sharply definable, is nevertheless unimportant. Surely, sir, we cannot conceive that. It must be that that is the division under which all practical surgical differences must range themselves. If a cancer rises as a little patch on a person previously healthy, and then expands itself throughout the frame, so that, poisoned by that one spot, the life of the patient soon becomes hopeless through the effects of that spot upon remote parts,

then surely the surgeon will have recourse to the knife and as quickly as possible remove the first spot that appears. And if, as Sir James Paget says, after removing 500, he finds 499 recur, then he will say, "Let me remove it earlier." He would even, like the Israelites of old, have published abroad the first sign of such a scourge, that people might, from the very first moment of its appearance, come forward and let the surgeon perform. On that view I can quite understand Mr. Jonathan Hutchinson's strong speech. He seems to me to have been the only pure localist who has as yet given us his opinions, and in his readiness to come forward he spoke like a good surgeon. If I remember rightly, he argued in favour of his views because it would lead us to operate, as though pathological faith that did not lead to surgical works is dead.

Taking the other view, and supposing that the general system is first charged with cancer, and that all the cancers that appear are but outputs of this general cancerous store, why should we operate at all? Should not we rather leave what exists alone, lest by removing it we should bring about a worse evil? That surely is the great question that we are here to discuss, and the distinction between those views is absolute, and it cannot be bridged over. You must either take one side or the other of the question, or you must drop it altogether; but, unfortunately, there is another road, and you are not obliged to drop it altogether. You may adopt some doubtful ambiguous word and cover with that word the essential difference that there is between those two views; and a word has been brought in which has largely played that part in the discussion—that is, the word "constitutional." I heard in all the speeches the word constitutional used as if it were opposite to local. Now, sir, I must protest with all my power against such a use of that word. It has been gravely argued here that if, when any person is subjected to a common kind of injury, his tissues react in an unusual way, he must have a constitutional peculiarity. That argument is either a truism or a fallacy. If by it you mean that a part subjected to an ordinary injury, if it acts peculiarly, must be peculiar—that is a truism; but if you therefore conclude that the whole frame would, under similar circumstances, act in the same way, then your conclusion is a fallacy. There is no opposition whatever between constitutional and local. What, for instance, can be more constitutional than one's great toe or one's liver? What is the constitution but, as I understood Sir Wm. Gull to put

it, the putting out in different localities things which were enfolded in the germ? So that really to become local is the very essence of being constitutional. I would even say that nothing is constitutional that is not local. But, without dwelling upon that, let me say that I am only objecting to the use of the term constitutional, which I conceive must haze into limbo the whole question, while we continue to use it in that ambiguous sense. But there is a good question before us, and that is this: Drop the word constitutional altogether, recognise that cancer is a disease which ultimately kills by becoming general, and which at first is local, and then the question is, Does the general condition precede and cause the local, or does the local condition precede and cause the general? Both these views cannot be true, and the word constitutional in its vague double meaning had better be dropped out of the question altogether. That, I say, is a good question, because a realisable and a soluble question; and although we may not be able to solve it now, yet I hope that the good and the proper work of this Society, the bringing forward of items of fact which shall lead up to some conclusions, may tend in that direction, so that in time this soluble question may be solved. At present the mode in which the question is treated I will describe in this way. Some hold to the local view and others to the general, never allowing it to appear (through a politeness or gentleness to each other's view) that there is any actual divergence between them. One takes up position for the local view, another for the general view, and each tries to press the origination of cancer from his own point, the local or the general. So they resort to a competition who shall show the earliest appearance—whether the localist shall show the earliest appearance in the spot, or whether the generalist shall show that cancer appears earliest in the whole frame. Now, I believe that cancer appears earliest in a certain locality, and that the danger of cancer consists in the extension from that locality; that cancer becomes general and fatal through the influence of a part first cancerous. In other words, I am strictly a localist; I will, therefore, shortly place before the Society those arguments or those facts and bearings which, I think, are capable of supporting that view. No one can be cognisant of the interesting facts that have been from time to time brought forward in this room without following one easily through these propositions: first, that cancer spreads in the part (we are not likely to forget that); secondly, that cancer runs along the lymphatics to the glands; thirdly, that cancer makes its

way along the blood-vessels to organs remote through the medium of the circulation. Those are facts which are certain—there is no hypothesis about them. Let that thought govern your ideas, and then what room is there for any notion that a general state of cancer precedes a process of the kind? If it is at all probable that cancers come in spots, run along the lymphatics, and go away to remote parts, where is the room for any general carcinosis? I will put it in this way. If any one conceiving himself to be a generalist allows me this, that whatever is pervading the general system something must have happened in a part, and through that something which has happened in the part the general system is afterwards affected—that it is the affected part and the subsequent results on the general system that cause and constitute carcinosis—then I say he is a localist, and however great he might be, and however eloquent, I should claim him as such. I said that cancer extends in the part, runs along the lymphatics, and goes to remote organs in the circulation. But there is another kind of evidence for which, if I had Sir James Paget's eloquence, I should certainly claim a very special kind and form of recognition from the members of the Society. I should like, then, to approach it in a peculiarly receptive attitude of mind, because it wants some delicacy to feel all its requisite bearings. Let me give this as an instance. A man gets a cancer in his rectum; you examine that cancer, and you find it is a big one. He has got also cancers in his liver; you examine those cancers, and you find they are little ones. The great cancer in the rectum is obviously prior in time to the minute development in his liver. One certainly precedes the other, but when you come to examine the cancer what do you find? You find that the rectum cancer is rectum tissue. I am sure I may appeal to the experience of many pathologists here when I say that we do find cases of cancer in the colon and in the rectum whose structure is really that of the Lieberkühn follicles of the mucous membrane of the gut. Well, that would not have been wonderful if, when we went to the liver, we found that the cancer exploding in the liver had taken the shape of liver tissue, just as when exploding in the rectum it had taken the shape of rectum tissue. The generalist, if he thinks that there is any general state of cancer which comes out locally, according to the nature of the part, must expect to find rectum cancer in the rectum and liver cancer in the liver. But instead of that I have repeatedly seen rectum in the liver. I do not hesitate to say so; I have seen Lieberkühn follicles of exquisite con-

struction in the liver itself. Lest any one should doubt me and think that I am drawing on my own imagination, I will bring forward a very common instance. Ten months ago there was a man in Guy's Hospital under my care with a monster tumour in the arm, near the shoulder. The poor fellow went to the bad and died. When we examined him we found in his lungs other small tumours. The bony tumour on his arm proved on microscopic examination to be osteroid chondroma, according to Virchow's nomenclature; the lumps in the lungs were bony too. There was a vast mass in the arm, and there were little bits in the lung. Obviously the arm disease had preceded the lung disease, and what had grown in the lung? Why, bone; and it was in bone that the disease commenced. If it were a general cancer pouring out cancer in the two parts developing according to the part, we should have had lung in the lung and bone in the bone, instead of bone in both cases. Looking at these facts, how can the conclusion be resisted, that it was in bone that cancer arose, and from bone that it spread, so that the cancer must be interpreted in this way—that it was the acquisition on the part of the bone of a power of instilling its own nature upon the lung. I should like to use Mr. Simon's words—they are words that I have used for a long while. He spoke of a sort of spermatic influence, and the term is a very good one. It is more like generation than anything else. The bone became spermatic to the lung, so that it sent off its elements and colonised the lung with bone, and the lung became bone through a kind of spermatic influence from bone. I am putting it very hardly. I say, then, that another very powerful argument in favour of the local origin of cancers is this, that the first cancer that appears has a likeness of the part in which it appears, and the secondary cancers arising from the generalisation have the likeness of that first cancer, and those who doubt that they came from the first cancer must show us why they have that likeness.

Then there is another point which ought to be specifically, boldly, and clearly stated. I have here a little drawing which I made in 1866, to show that in the process of cancerous change a transformation of the individual elements is traceable. I mean that when, as in that instance, liver becomes cancerous, you can see a liver-cell turn into a cancer-cell. Of course you cannot watch that individual liver-cell. If we had the universal periscope, we might no doubt see what actually took place; but we are obliged instead

to see a liver-cell as one perfect thing and a cancer-cell as another perfect thing, and then by our mind's eye to perceive the gradations between the liver-cell and the cancer-cell—gradations so exquisite that you cannot see when any break in nature occurs. That is surely a very strong argument. If you can find, as in that case, that the process extends from breast cancer to the liver, and if you watch the change, and see the cells changed as they stand, it is a strong argument in favour of the whole process being due to the influence of the original cancer. But what have we as opposed to this, which I think a very sufficient argument in proof of the local origin of cancer? For I would say that if those facts can be proved in reference to all cancer, then there is no room whatever for any suggestion of general carcinosis; it takes the wind out of its sails; it is not wanted. When you prove that from the first cancer all that we call cancerous change and cancerous generalisation does arise, there is no room for any other hypothesis; you have occupied the field, and whoever comes with another hypothesis knocking at the door is too late. But unfortunately it is not all so clear as that, because through the necessary imperfection of many post-mortems cases do crop up in which all this cannot be made out, and thus there exists a sort of limbo of imperfectly observed cases, upon which the man who believes in general carcinosis may seize; and he may then bring forward his arguments in support of that view, and try to invade the whole field from that doubtful corner. And what are his arguments? I do not like to touch upon the arguments which Sir James Paget so beautifully brought forward. I was delighted, as we all were, with his speech, and I was so impressed by it for a time that it seemed to me that cancer must come not only generally, but even out of the blood. I came into the Society with no such belief, and it was nearly a fortnight before I could even venture to take up the paper or look at Sir James Paget's speech to see what it really was. It then seemed to me (it was a poetic moment, and I was by the seaside at the time) that it was a beautiful sunset cloud of a dying faith, and that when one held the cold hand of reason against it, it condensed into a very few drops. This is shortly all that Sir James Paget advanced. He said that cancer is hereditary, and then in the next breath he said, "So also are enchondromata, fatty tumours." Well, we dispose of that at once by saying this: Inasmuch as we are in search of a distinction between the simple tumours and the cancerous, what is the

use of bringing in any feature which is common to both? How can what is common to both explain the peculiarities of one? But then Sir James Paget says, It is not only hereditary, but it is hereditary in a very peculiar way; and the peculiar way was this, if I remember rightly, that the cancer does not only strike upon certain parts, but it spreads itself over a variety of organs in the organization it successively attacks in the family. Now, I am obliged to shuffle a little in meeting that. First, let me say, I was not in the least prepared to find that Sir James Paget had come to the conclusion that of every three persons who have suffered from cancer one at least has been hereditarily tainted; because that very morning I had been in conversation with my distinguished colleague, Mr. Birkett, on that very point, and he left me with this impression (which I trust he will take the opportunity of contradicting if I have misunderstood him), that with all his care and pains—and we all know what his care and pains are—after searching through the family history of numerous persons who had come to him with cancer, he was not able to say with any confidence that cancer was specially hereditary at all. This is very astounding, but not more so than that Mr. Erichsen and Mr. Hutchinson should say they never saw pyæmia in private practice, and that Sir James Paget and Mr. Hewett should declare that they had seen it repeatedly, as frequently as in hospitals. This leads us to the conclusion that individual experience is not to be accepted as establishing a universal proposition. I regret if I should seem to say anything in disparagement of the importance and accuracy of Sir James Paget's observations; nothing could be further from my thoughts; it is only in justice to my position that I feel bound to say what I do. But I have another thing to mention. It will be in the recollection of all members of the Society that on the first evening of the discussion Mr. Hutchinson drew attention to the very interesting fact (I think he also claimed Mr. De Morgan as having observed it likewise) that warts appear in cancerous families. Well, if warts appear, and that is a new thing just observed, and we are still in a developing world, may not fatty tumours soon appear, and may it not likewise be shown that sarcomas and I know not what are also found in cancerous families? If so, then our proposition will take this form, that equally, with non-malignant tumours, you have this peculiar development in all parts. Then I shall lay down my syllogism again and say, what applies equally to the non-

malignant and to the malignant can in no degree explain the peculiarities of the malignant. The last point that Sir James Paget brought forward was that cancer must be general because it so constantly recurs. Well, but the localists pride themselves on the perfection with which they not only explain the recurrence, but actually trace the way in which it does recur and show how you can make it recur—by leaving a little bit in when you operate, by leaving a patch of gland, by operating so late that the lungs are already affected, and so forth. Surely that cannot be an argument in favour of the general origin of cancer—I mean of its arising from the general conditions, when the localists profess to be able to explain the whole of it. Sir James Paget said that cancer must be general because a chance wound or injury produces cancer in parts in the same way or by an analogous process with that process in which we observe that tubercles, syphilitic or other, admittedly constitutional conditions, likewise develope from unusual injuries. That is a long sentence, but what I do mean is this,—that there is such a parallelism between tubercle and cancer, that if you hold tubercle to be constitutional you must also hold cancer to be so. Now, sir, it is not three years since Mr. Simon, sitting in that chair, showed us proof that tubercle arises locally. And have we not had specimen after specimen brought forward to prove that people get tubercles through old local patches of dirty cheesy remainders, bronchial abscesses, duodenal ulcers, and so on? All kinds of odd evidence we have had heaped up to show that tubercle comes as an accidental development from a really local disorder. I should be much more inclined to go with Mr. Simon's strictly philosophical view that he gave us in his most able and philosophical speech, when he classed cancer with tubercle. For myself, I would throw cancer and syphilis and tubercle together as disorders which become generalised from a local origin, and very rapidly become so generalised. I am very sorry to have occupied the time of the Society so disgracefully long, but before closing my speech I should like to point out how wide are the bearings of the question we are discussing. Especially it strikes me that there is a most interesting and important analogy to fevers; the great epidemic fevers. Is any member of the Epidemiological Society present? One hears so little of the epidemiology of the epidemiologists that one would be delighted if they would come forward and explain to us whether, when in the body corporate fever bursts out, it arises in

any local unit of the community as a distinct disorder and spreads from him contagiously, or whether it infects the body corporate as a body and bursts out in Jones and Thompson and their successors as out of the general into the particular. Surely there must be close analogy between the two questions. How vague an analogy one can of course easily see. I can in my own mind feel how long it must be before we can adopt a general formula that will solve those questions, but I feel satisfied that when the solution of the question comes, some general law governing the whole must be discovered.

Mr. Erichsen.—I have listened with the greatest interest to the remarks that have been so admirably put before the Society by Dr. Moxon, a great number of which, I confess, were quite new to me, as I daresay they are to many members present, and have tended to confirm in my mind the opinion that I have always entertained and expressed, sometimes vacillating, as necessarily an opinion of that kind must be, as to the localisation of cancer. And I must confess that I range myself in the distinct category in which Dr. Moxon wishes to include those who enter into the discussion on the side of the localists. But it would, sir, I think, be altogether irrelevant and useless at so late a period in the discussion as this to go over the ground that has been traversed to and fro by many of the preceding speakers with regard to that question of localisation or generalisation, if we may take Dr. Moxon's term rather than "constitutionalism" of cancer. But there are one or two points in connection with that subject of cancer that, so far as I recollect, have not altogether been touched upon with the importance that they deserve; and if I allude to them it is because I think they have a very marked bearing upon the recurrence of cancer, and that they tend very much to involve the whole subject of cancer in a considerable haze of difficulty and doubt, so far as its solution into the question of localisation or generalisation in its primary origin is concerned. Now, the first of these points to which I wish to allude is the extreme vascularity, not of the cancerous tumour itself, but of the tissue that surrounds that cancerous tumour. It is well known to all operating surgeons that in removing a cancer, say a scirrhus of the breast, even though it be of small size—not bigger than a walnut—the amount of hæmorrhage to be expected is very considerably greater than in the

removal of a tumour of a simple character, say adenoma, a dozen times that magnitude; that you may remove an adenoma as big as a cocoa-nut and have fewer vessels to secure than you will after the removal of cancer not bigger than a walnut. In fact, very small cancers often furnish a very large quantity of blood. There is an active hyperæmia around the cancerous growth itself, and that hyperæmia may be looked upon, to a certain extent, as an argument in favour of the primary localisation of cancer. It must arise from one of two conditions. It must either arise from the irritation produced by the cancer as a foreign body lying in the tissues in which it grows and amongst which it is developed, or it must arise in consequence of the demand made upon these tissues by the active inherent vitality of a self-supporting organism growing in the midst of them, which requires a large afflux of arterial blood for its nourishment, for its development, and for its perfection. So far as the first supposition is concerned it is scarcely tenable, because we find tumours infinitely larger, harder, more irritating, so far as their mere mechanical presence is concerned, than cancerous growths without any of this great vascularisation of the tissues around it. I think, therefore, that we must look upon this active hyperæmia of the tissues around a cancer as an evidence of the great demand made by that self-supporting organism upon the tissues in the midst of which it is lying, and that so far this condition may be looked upon as favouring, to a certain extent, the idea of the local origin of cancer. But it has another effect, and it is this, that it tends, I believe, very rapidly in the disease to wash the cancerous elements into the general circulation, and hence it is that one so commonly finds the constitutional condition, that carcinosis or cachexia marked so very early in the disease, almost as soon as the local disease is recognised, contemporaneous sometimes with the recognition of the local disease; and this condition of the circulation around the cancerous tumour is greatly favoured also by that peculiarity of the cancerous growth, that it is uncapsuled. That, I think, is one of the peculiarities of a cancerous growth, which not only tends also so greatly to favour the general constitutional infection, and that very early in the disease, so tending to confuse somewhat the idea of the constitutional and local origin of the affection; but this want of an enveloping capsule also tends to a speedy recurrence after removal. In consequence of that want of an enveloping capsule there is no limitation to a cancer from the

very first moment of its development. If we take the smallest nodules of cancer that we surgically meet with, those little granular bodies that are scattered sometimes through the skin in the neighbourhood of a cancerous growth, and take out one of these, we shall find that it never shells out, it never separates like almost any other kind of tumour, it is never surrounded by a capsule, but it invariably spreads into the neighbouring tissues and is intimately incorporated with them. If we were to go further back, no doubt we should probably find the same thing; in fact, if we go back to the primary elements of a cancerous growth—and one cannot conceive a cancerous growth existing except in the form of stroma and cell and the resulting cancer juices—if we go back to the very first commencement of cancer in this way, we find nothing to prevent the extension of any second cell that may form; we find nothing to prevent that migratory cell travelling widely into areolar space which we have had so eloquently described, that migratory cell which one might term the *juif errant* of histologists, which goes travelling on from space to space, until, at last, it finds a resting-place certainly where it develops into a new growth, and where it undergoes a process of self-multiplication and so contaminates the system. From the very commencement of local cancer this process, from the want of a cyst, from the want of an enveloping membrane, from the want of any barrier of any kind to shut off the cancerous growth from the neighbouring tissues, this process, in all probability, has commenced and is proceeding, and hence it is that we have so little success in surgery in preventing the recurrence of cancer. Because, although I hesitate to accept those figures that Sir James Paget has mentioned as not one case in five hundred—but it is impossible for any surgeon not to feel that they must be approximately near the mark—before we can make a diagnosis of cancer, before we can persuade the patient to undergo an operation, before the operation itself can be performed, these processes of washing away of cancer structure, of the travelling into the areolar spaces by these migratory cells, and the transfusion and diffusion of cancer juices with the intrusion, at all events, of the cancer elements into the lymphatics in the neighbourhood, into the veins in all probability, carried by them just like the emboli in pyæmia and deposited just like emboli in those very organs in which pyæmic abscesses are so frequently deposited—all those processes have already begun to take place and have been in active operation,

partly owing, perhaps, to this rapid and abundant wash of blood around, if not actually through, the cancer itself, a wash of blood unrestrained by any enveloping membrane or any separating barrier in the healthy tissues, such barriers as shut out septic poison and the absorption of putrescent matters, or matters that may contaminate the system in other diseases. In looking to this general question of the localisation or the generalisation of cancer, there are yet one or two points to which I would wish very briefly to refer, and the first is that to which Dr. Moxon has already given attention, namely, that of the hereditariness of cancer. Now, there undoubtedly we do get into a condition of ambiguity and of diversity of opinion. Velpeau, more than twenty years ago, in his great book on diseases of the breast, gave as the result of his observations the very figures which Sir James Paget gave the other night; namely, that cancer is hereditary in one case in three. Sir James Paget has recently come to the same conclusion. That conclusion is, undoubtedly, very different to what is maintained by other surgeons. I can give no opinion personally upon the matter, because I have never made out the statistics, and they are extremely difficult to make out; but the fact, at all events, remains certain that it is very doubtful how far cancer is hereditary. But supposing it is hereditary in one case in three, we have still two thirds of the cases unaccounted for by any hereditariness of taint; that of itself leaves a very large margin of cases, which, if we take hereditariness as synonymous with or in any way implying general infection or constitutional infection of the system, cannot be brought into that category. But I quite agree with Dr. Moxon, and also with some of the speakers who preceded him, and especially with the observation made by Mr. De Morgan, that it is very necessary to separate the two conditions, that an hereditary condition is not by any means a constitutional state. We have seen that and we know it from the transmission of feature, from the transmission of deformity, and the transmission of simple tumour, wart, or what not; that unless the term is strained beyond the meaning we usually attach to it, it cannot be looked upon as synonymous with a constitutional condition, although in some cases it undoubtedly may be so. There was one point Sir James Paget alluded to with, I may venture to say, great sagacity, and, indeed, it was a strong point, namely, that the hereditary tendency will skip a generation in consequence of the parent in that generation not having attained the cancerous age,

I may not put the point quite correctly, but it was as nearly as possible to that effect—that a person might transmit the tendency to cancer, although the cancer might never develop in him in consequence of his dying before it could do so. That, no doubt, is the case; but I take it that it may be so with any local condition that is not cancerous. It might be exactly the same with premature baldness; that a person with a family tendency to premature baldness, coming on, say, at the age of thirty, might, if he dies at the age of twenty-eight, transmit that tendency to his offspring, a purely local condition, without ever suffering from it himself.

As to hereditariness, there is still so much diversity of opinion amongst surgeons on that point, and so much evidence that hereditariness is not necessarily by any means a constitutional condition, that we cannot attach too much importance to that as an evidence of the constitutional nature of cancer. There is one other point which I do not think has been alluded to; it is a very important point, and one in the working out of which I think a great deal may be done to trace the origin of cancer,—I mean the geographical distribution of the disease. Dr. Haviland has shown in the cancer chart which he published, collated from the records of the tables of the Registrar-General, that there are cancer fields in England where cancer predominates to an inordinate extent, and that these cancer fields are associated with certain local peculiarities of soil—geological peculiarities. It is well known, no doubt, to many members of the Society, that in those districts where the primitive rocks and the earlier formations principally exist, cancer is comparatively seldom met with, whereas, as you descend the river courses and get into the tertiary formation, and especially into low-lying alluvial lands subject to overflowing and other conditions of that kind, you get cancer developed to a much greater extent. That subject is as yet not worked out sufficiently, but I think it is a very promising field to work on in order to determine the real origin of cancer of which we, as yet, know absolutely nothing. No doubt the geographical distribution of cancer is an argument that cuts in both directions, against localists and for them. Against them, because it might be supposed that a general constitutional condition was induced by residence in those localities; it might, on the other hand, be looked upon as favorable to the localists on the supposition that some organic element in some way was introduced into the system which directly applied to a part gave rise to the starting-point to the

first early germ, as it were, of cancer. It is no use to add hypothesis to hypothesis in these discussions. I merely indicate that question of the geographical distribution of cancer as being one that I think does promise, when worked out, to yield some good fruit for the future. No doubt cancer is closely allied, as far as its general appearance and course is concerned, to ordinary syphilis. There is no disease with which the resemblance is so perfect so far as course is concerned in the mind of any surgeon as syphilis; and cancer, just like syphilis, appears to affect certain constitutions, certain individuals, beginning locally, so that it becomes fixed in the constitution in such a manner that it can scarcely be eradicated. We find with syphilis that there are different constitutions affected very differently by the same kind of poison; that in some constitutions the poison runs on in the most virulent manner and assumes the most active form, notwithstanding any treatment adopted to restrain it, whilst in others it is comparatively somewhat innocuous; and it really appears as if it was something the same in cancer. Let cancer begin from a local irritation in some constitutions, and it will run on in the most virulent manner without let or hindrance whatever is done, whether operated upon or not; nothing seems to exercise any influence upon it. Even if operated upon, the local recurrence is of the most rapid and the most virulent kind. It would appear that if local—as I believe cancer to be—there are certain constitutions that afford a far more fertile soil for the development of that local poison, and in which it grows and spreads, and through which it develops itself with a degree of vigour one does not see in other constitutions; and there is a certain kind of frame that one gets accustomed, especially in middle aged people, to see, whether in men or women, stout and ruddy, and fairly healthy looking, that does at least come to the surgeon's mind to be something like a typical constitution in which cancer is apt to develop, and in which, if once it is developed, it will run its course unchecked, under any treatment, whether it be local or constitutional.

Dr. Crisp.—The older we get, sir, the more we are wedded to opinions that we formed in early life. I took a good deal of trouble to record the statistics of cancer many years ago as it occurred in a great many cases, and I confess I was utterly astonished to hear one remark made by Mr. De Morgan with regard to sex. He said, to show that cancer was not a blood disease, "how happens it that it is

pre-eminently prevalent in women?" And then he went on to say that, "taking a given number of cases of cancer, we should have probably ninety per cent. of them in the uterus and in the breast." Now, I know from statistics that I have collected that that was utterly and entirely fallacious. I knew the difference between the sexes was not anything like what Mr. De Morgan supposes. Taking our own 'Transactions' I have an accurate analysis of 353 cases here recorded, and I must say *en passant* they do not carry out Dr. Moxon's views that bone is transmitted from one place to another, and other cells from one part to another. I believe if those cases are carefully examined no such inference can be drawn. Some cases might favour Dr. Moxon's view, but the generality do not. Now, taking the cases published in our own 'Transactions,' to which I attach very little importance—I mean importance in this sense as regards sex, because it is very well known that the cases quoted by Mr. De Morgan of cancer in the uterus and cancer of the breast are seldom brought here because they are common cases; but even taking the 353 cases mentioned in our own 'Transactions,' there are something like 30* or 40 more males than females. But let us take better evidence than this. I make an analysis of the Registrar-General's returns since 1838, and I find that out of 64,391† cases of cancer, 18,059 were males and 42,137 females. Taking into account the active functions of the breast and of the uterus, and even when in abeyance the disturbance to which those organs are constantly exposed, I do not think it is so very wonderful that we should have more cancer in females than in males. One melancholy fact from the returns is this, that whilst in 1838 there were only 2448 cases, in the year ending in 1870 there were 9508, there having been a regular increase every year with the exception of two. Even taking into account the increase of the population, this is an enormous increase in the proportion. I happen to know in England two especially of these cancer-breeding places, where perhaps Mr. Erichsen might attribute some influence to the locality. But I doubt very much whether locality has much to do with it. You know in country places people constantly marry within a circle. One man who happens to have a cancerous taint may produce five or six cases of cancer, and as they seldom go

* 195 males, 168 females.

† These numbers apply only to one decennial period, 1851—61; but if the whole period were included the result would probably be about the same.

far from the locality the prevalence of cancer may be more readily accounted for in that way than by any influence that locality or soil may exert. Then with regard to age—these statistics and those of our own 'Transactions' do not quite square with the notion of Sir James Paget that cancer is a disease of degeneracy and old age. Of these 64,391 cases, 27,806 are under forty-five years of age, and a vast number are under thirty, so that although Sir James Paget is perhaps right in the main, the statement needs some qualification. Now, with regard to the question of hereditary or constitutional taint, is cancer a blood disease? I think there never was a greater misnomer than to speak of blood disease; because after all we know very little about blood disease. I suppose no disease that affects the human body does so without the blood being altered in some way or other, and therefore the term "constitutional" objected to by Dr. Moxon is, I think, about the best that could be used. During my somewhat long life I have had the opportunity of attending a large number of cancerous families. Three or four sisters have died of cancer, and perhaps one sister has escaped. Let me put it in this way to show that children are born with a tendency to cancerous disease. One woman with a tendency, whose mother had died of cancer, gets a blow on her breast; in all probability this is followed by cancer. Another woman who has not this tendency may get twenty blows on her breast and you cannot produce cancer. So I believe one might multiply examples to a great extent.

Sir Benjamin Brodie, whose authority I am sure all will respect, came to the conclusion before he died, that he would never again remove a cancerous breast without first laying before the patient the objections which his experience showed him to exist with regard to that operation, namely, that having removed 500 to 600 breasts, and perhaps more, he found the practice rather tended to shorten life. Another question raised by Mr. De Morgan was that of parasitism. He does not class that among the causes of cancer. I confess that on looking at cancer, and some of the allied structures in the vegetable kingdom and in some of the lower animals, I think that it is probably a parasitic disease, and may, I think, be called so. We have foreign cells, it is true, some of them resembling normal cells, but if we could positively investigate thoroughly those cells we might find them very different to what we suppose. Therefore it is not to be assumed that because a cell epithelial, for example, happens to have a resemblance to a normal cell, that it is

really in a normal condition. We have a disease preying upon a body, producing cell-growth, and ultimately destroying it, as in many of the lower animals we have parasites producing the same effect; and I am rather disposed to think, hereafter the parasitic theory will not be so lightly treated as it is at present. I intended to have brought a large number of preparations of cancer in the lower animals down, and I adopted the ascending scale as I always have done, going through the vegetable kingdom, and working upwards to man; but time will scarcely allow me to touch upon this matter at present. I think I had better on a future occasion, with the Society's permission, bring these specimens forward, and then make my remarks on the lower animals. I may just mention a few circumstances connected with the lower animals. Cancer is not at all an uncommon disease among our domestic animals. In wild animals, as far as I know, there is no case on record, and I believe, although our evidence is very imperfect about uncivilised men, that amongst them cancer would also be very rare. Possibly some gentleman may give information upon that subject. There is one very curious thing which bears materially on Mr. Darwin's opinion. I have now examined something like 230 of the quadrumana, and have never yet found a case of cancer. I have brought forward here the tongue of a chimpanzee which was sphacelated, but not cancerous. I have never yet in a monkey seen a case of cancer. Another remarkable thing about these animals supposed to be so nearly allied to ourselves is, that they have no infantile disease. You know the dog has the distemper almost as certainly, perhaps more certainly, than a child would have measles. You know that the horse has the strangles and lampers, diseases peculiar to young animals, but as far as I know, the monkey never has anything. There is one important matter with regard to the hereditary nature of cancer in the lower animals, though it is comparatively rare. I have heard of cases where a bitch has had a cancerous breast, and that cancerous taint has been communicated to her pups, just as children born of cancerous parents have something in their constitutions, in their bodies, which is born with them, and if they are placed under certain conditions, and under certain circumstances, that cancerous taint comes out. I think that that is as common-sense a view of the matter as the one entertained by Dr. Moxon.

Dr. Moxon.—There is a very short telling argument which I

may put in this way in reference especially to age. The argument of the last speaker is that old age is hereditary: cancer belongs to old age; therefore cancer is hereditary. I will not say further. Perhaps Dr. Crisp's monkeys were all young monkeys.

The PRESIDENT.—Were the monkeys young monkeys?

Dr. CRISP.—We have had a few monkeys brought up at the Zoological Gardens, and we have watched them for a certain time. They are generally tuberculous; they die of tubercle. We have watched them long enough to know that there is no special disease that is peculiar to the monkey as with children.

The PRESIDENT.—Do you know the ordinary age of those monkeys which attain old age?

Dr. CRISP.—They vary from three to six years.

The PRESIDENT.—Is that old age or their natural condition?

Dr. CRISP.—It is not known how long a monkey will live; indeed, we know very little about the age of wild animals in a state of nature.*

Mr. HOWARD MARSH.—There were a few remarks I intended to make had time allowed, but at this late hour of the evening I will curtail them as much as possible.

It appears to me that Dr. Moxon and Mr. Erichsen have both taken up the explanation of the spreading of cancer rather than its primary development. The discussion the other night aimed at ascertaining if possible how cancer comes to be present in the system at all; but Dr. Moxon and Mr. Erichsen have accepted the position that cancer is already developed, and then have gone on to show how it spreads. If they will allow me to say so, we had that

* As regards the age of monkeys in confinement, I supposed, when I answered the question, that the duration of life in confinement was generally from three to six years; many live longer. I have known one instance of a monkey in this country that lived nearly twenty years. I learn from Mr. Bartlett, the Superintendent of the Zoological Gardens, who for a great many years has paid much attention to the diseases of the animals, that "he has never seen a case of cancer in a monkey," and Dr. Garrod, the present Prosector at the Gardens, gives me the same answer. My reply to Dr. Moxon was too curt, but it will be remembered that my statistics showed that cancer is not a disease peculiar to old age. For it must be especially borne in mind that in the 64,391 cases of death from cancer in England and Wales from 1851 to 1861, the disease, in the great majority, had existed many years before death.

all thoroughly explained the other night in Mr. Arnott's remarks and illustrations. I do not think any of us doubt that cancer may spread in the way that these gentlemen have described after it has once been developed in a primary state. But the question is, How is it developed in the primary state, and where does it come from? That is the point chiefly discussed at the last meeting of the Society. An argument that one may take exception to was brought forward by Sir William Gull. He said we must look at the ovum in its very commencement, and we must see how cancer or the tendency to cancer is conveyed to it at this stage. Sir William Gull said, in the first place, that cancer cannot be in the ovum a blood disease, because in the ovum at its earliest beginning there is no blood present. But surely to that it may be answered that, although there is no blood, in the same sense there are no limbs; but just as the limbs are present prospectively in the ovum, so is the blood. Therefore one cannot see, if there is a tendency in the ovum to the formation of cancer, why it should not pass into the blood just as it might into the limbs. Another argument that Sir William Gull used which seemed to me not quite sound was this. He said cancer might be constitutional in the ovum, but afterwards it could not be constitutional in the developed body; for, as he said, we must believe in locality somewhere, and, therefore, however constitutional or "all-pervading" the tendency to cancer may be in the ovum, yet afterwards, when the various limbs and organs have been differentiated and brought out, we must believe the cancer tendency finds its position in some one of these definite places. But in that sense the blood itself is a locality, and it is difficult to see why, if we must believe that cancer is to become localised in one of these positions, it should not pass into the blood as well as into the limbs. Perhaps we may get some little light upon the question of the local or general origin of cancer if we look at specific cases—at their phenomena—and try if we can explain them. There are three cases of a remarkable nature bearing upon the question published in Sir James Paget's book. A man injured his fibula, perhaps broke it, and almost immediately, although he had been quite healthy up to that time, he became subject to cancer at the seat of the injury. A boy was struck in the eye with an oyster shell, and immediately afterwards, that is, in the course of three or four days, a swelling was developed, and it became clear that he had a fungous cancer growing from within the eyeball. He died in a

few days. Another boy fell and wrenched his knee, and within a few days he became subject to cancer of the lower end of the femur. After hearing Dr. Moxon's speech one feels more than ever the difficulty of using the terms "local" and constitutional in an intelligible manner. But it seems to me that those who say cancer is a local disease must mean that it is originally confined to a particular locality in the body; while as to the term "constitutional," I would follow Mr. De Morgan and Sir James Paget in making it equivalent to "general" or "all-prevailing."

Now, with terms thus defined, how are we to understand these cases upon the local view? I do not think they can be explained unless we imagine a coincidence which makes the argument a kind of stumbling block. If these particular people had the tendency to cancer situated in only one spot of the body, it must have been this particular spot which was struck in each case—a singular chance, to say the least of it. On the other hand, it is easy to explain them on the opposite theory. Sir James Paget holds that there are two factors in the production of cancer, the constitutional factor and the local factor. In other words, there is the general tendency, the seed, and there is the fitting condition of the part, the appropriate soil. These cases are clear enough if we believe that the individuals had a general tendency to cancer, and that upon the receipt of the injury the tissues involved were so altered that they became an appropriate soil for the development of the disease. Mr. De Morgan mentioned the other night in his paper what, no doubt, is quite true, that it is very rare to find cancer of both of the mammary glands in the same patient. It may interest him, perhaps, to know that there are now in St. Bartholomew's Hospital two women who are subject to cancer of each breast. I will only mention one case, that of a woman forty-five years old, who became subject to a cancer of her breast just after Christmas, and along with that she was seized at the very first with symptoms of illness—wandering pains, wasting and languor, and cachexia. In a week or two cancer appeared in the opposite breast. She is now dying of cancer of the liver and many of the other organs.

Adjourned Discussion, April 21st, 1874.

Dr. GREENHOW.—I should scarcely have presumed to take part in this debate if it had been a debate on the histology, or even upon the pure pathology, of cancer; but it has, in fact, been a debate

upon the clinical history of cancer, and, therefore, as no one else rises, I will venture with some diffidence to make a few remarks upon the important subject which has been occupying the attention of the Society for the last three meetings. In saying that this has not been a debate upon the histology of cancer I am not unmindful of the fact that several very pertinent references have been made to that subject; that Mr. De Morgan has laid much stress upon the great mobility of cancer-cells; and, that Mr. Arnott has stated his opinion that the malignancy of cancer is in proportion to this mobility. I gather that Mr. De Morgan's view is that cancer is a local disease, spreading mainly by this transference of cancer-cells from the primary seat of cancer to more distant localities. Whether this be so or not, I leave to be discussed between himself and Mr. Simon, who, as I understood him, distinctly enunciated the view that cancer spreads, not by the transference of a cell from the original seat of cancer, as supposed by Mr. De Morgan, but by an infection which he compared to impregnation of the surrounding tissues, which thereupon took on a cancerous growth—a very different thing from the transference to a fresh seat of a cell or germ, which grows in the locality in which it finds its place and becomes a fresh nucleus for cancer. I regret that Dr. Creighton, whose researches were referred to by Mr. Simon in confirmation of this view, has not spoken here.

At the last meeting Dr. Moxon tried to bring back the Society to what he considered the essential objects of the debate. He stated that localism and generalism are incompatible, and he tried to bring us back to consider cancer as either an altogether local or an altogether general disease. And certainly, *prima facie*, there would seem to be great reason for supposing that cancer is a local disease. We find it begin in a particular locality, we find it spread from that locality by the lymphatics or by the vessels to more distant parts, and it would seem, therefore, to be a local disease. But this, I would maintain, is only one side of the shield; there is another side, and that is represented by Sir James Paget, who takes the view that cancer is due to a general condition. For my own part I do not see how we can maintain either an exclusively local or an exclusively general origin of cancer. There are, as I have said, two aspects of the subject; and when I analyse the statements enunciated by Mr. De Morgan, in the very admirable and carefully considered paper with which he inaugurated this

discussion, I find that he uses terms implying that there is something more than a local disease in cancer, something more than a local tissue change. He cites the hereditariness of cancer in proof of this fact; he says that a cancerous parent may have a progeny that does not exhibit signs of cancer, and that, nevertheless, cancer may be developed in the following generation, having only missed the intervening one by reason of the cancer not having been strong enough to develop itself in that generation. This view is a very material modification of what I have always thought to be Mr. De Morgan's doctrine, viz. that cancer is purely a local disease, beginning in the locality and spreading from that locality to the general constitution. He now admits clearly that there is a constitutional condition as well, and apparently he does not believe in the pure localism insisted on by Dr. Moxon and stated by him to be incompatible with constitutionalism; in fact, I cannot say that I see any great difference between this opinion of Mr. De Morgan and that of Sir James Paget, for Sir James Paget also says that he looks for both a local and a constitutional origin of cancer. Between the views of these two gentlemen, who may be said to represent the two great schools of thought on the subject of cancer, and who have had, perhaps, the largest experience of the disease of any surgeons in London, I cannot help feeling that there is not the wide divergence we have hitherto supposed; that there really is a harmony between the two schools; that, as Dr. Moxon said, there is a "sweet agreement" between them which renders the difference one rather of words than of things. For my own part, I think it is impossible to study cancer—to study it as I do as a physician—without seeing that there is something more than a local condition; that, although cancer may begin in the locality, there is a something in the system beforehand, a something which is called a predisposition or hereditary tendency. I know that these are words which are difficult to define, and which convey very different meanings, according to the men who use them and according to the circumstances under which they are used. Let me endeavour to show how I apply them to the subject in hand. For instance, I do not think that the hereditary tendency to a cancerous disposition is identically the same as that hereditariness which leads to the development of a particular congenital deformity. I have myself seen two cases of such developments in children whose parents were cousins. In the one case, one or more children

in each family had club-feet; in the other, supernumerary fingers. Here we have hereditary deformity always of the same organ. That is not the form of hereditariness or predisposition which we see in cancer. Neither is it that form of hereditary predisposition which leads to the development of a non-malignant local disease, such as hernia or hydrocele. I am acquainted with the medical history of a family five members of which, belonging to three successive generations, became the subjects of hernia in middle life. Sir Henry Holland mentions the hereditary occurrence of hydrocele in three out of four generations of a family, the missed generation being represented by a female. A somewhat analogous case once came under my own observation. I remember many years ago seeing a gentleman fifty-five or fifty-six years of age, who had hydrocele. His only two brothers had it before him at about the same age. Here was undoubtedly an hereditary tendency to hydrocele; that is to say, an hereditary tendency to a local disease definite in site and character. I do not think that cancer has exactly that sort of hereditary tendency. Neither has it a tendency like that of gout, which more or less affects the whole system and manifests itself sometimes in one locality and sometimes in another in the same individual, and even manifests itself in different forms of local disease; sometimes confining itself to the joints, at other times affecting the lungs, and, again, at other times affecting the skin.

If I were to name any one kind of hereditary disease which most nearly resembles cancer I should say tubercle; which, like cancer, is often hereditary and is also both local and constitutional. Phthisis is undoubtedly hereditary, as cancer is hereditary. Notwithstanding all that has been done of late years to throw light upon phthisis as arising from various local causes, as from catarrh or from pneumonia, we shall all agree that it is undoubtedly also an hereditary disease. which may develope independently of these local ailments. Moreover, phthisis sometimes descends to one side of a family only. I remember a family, some of whom were patients of mine, in which there were five daughters who died of phthisis between twenty and thirty years of age; there were only two sons (schoolfellows of mine), who are living now, and are both older than myself. I remember another family that suffered from phthisis, and four sons died of it, while three daughters are, or were a few years ago, living. This occurs in cancer likewise. We find that cancer sometimes descends on one side of a family only, especially in the female sex,

perhaps because the female organs, the uterus and the breast, are especially liable to it. In this respect then, also, cancer resembles phthisis. When I look at these analogies I cannot help thinking that cancer is a general disease. How else, indeed, can we explain such a fact as this which occurred in my own practice? Three sisters and two brothers of one family died of cancer. Four out of those five cases were in different organs. One had cancer of the œsophagus, another had cancer of the mamma, another had cancer of the uterus, and another had cancer of the rectum; I do not remember the site of the fifth. Here cancer was obviously an hereditary disease, affording, in my opinion, very strong grounds for believing that the disease was in some way or other constitutional. Of course, there are many such cases on record. Sir James Paget has published numerous cases of the sort. I merely quote this as a striking one which came under my own observation. Again, I saw a patient a year or two ago who had cancer of the mamma. Her mother had died of cancer of the rectum. Here, then, were a mother and daughter, both of whom died of cancer, the seats being different in the two persons.

It would occupy much time if I were to enter at length into the consideration of the resemblances between cancer and tubercle, and I will not attempt to do so, as I am aware that several other gentlemen are to speak this evening, and that Mr. De Morgan has to reply to the various speakers. But I may say that, just as tubercle sometimes becomes quiescent and remains latent for a long time after its first development, so likewise does cancer. As regards tubercle, we sometimes find distinct evidence of phthisis in the apex of a lung, and yet, after a time, the patient recovers. The tubercle has probably not gone, but it has become obsolete. For the most part, sooner or later, perhaps at a distant period, the mischief lights up afresh, and the patient eventually dies of tubercular disease of the lungs, or, perhaps, of acute tuberculosis. The same occasionally happens in cancer. I do not refer to the almost certain recurrence of cancer in or near to its original site after its removal, but to its recurrence after long intervals of latency in situations at a distance from the original site, and where it seems very difficult to assign the reappearance of the disease to the transference of germs from the place of origin to the new seat. Several remarkable cases of the sort have come under my notice. In one of them cancer reappeared in a distant organ eight years

after a scirrhous tumour of the left breast had been removed by escharotics. In another instance I was consulted by a lady for a cancerous tumour of the liver attended by rapidly developed curvature of the spinal column. She had been in perfect health, and it was said quite straight only four months before I saw her. On examining her chest I found the right nipple retracted and the mamma converted into a small hard nodule, and was then told that, fifteen years before, she had been under the care of Sir James Simpson and Professor Syme for a scirrhus of that breast. No operation had been performed, and she had for many years enjoyed good health and considered herself as cured of the cancer. She died a few weeks after I saw her. Very recently, also, I attended another lady who was suffering from abdominal cancer, and found in her also an atrophied scirrhus of the mamma. In her case, moreover, there was a distinct history of hereditary cancer in her family. Cancer thus resembles tubercle in its local history somewhat, and in its constitutional history generally.

My own opinion is that there is in many cases a strong hereditary predisposition to cancer. Sir James Paget, whose experience is very large, told us at the last meeting but one that in his experience about one case in three was hereditary. Why cancer, thus being an hereditary disease, should manifest itself in a particular locality is not obvious. Why a person who has inherited from his father or mother, or some other ancestor, a tendency to cancer, should get cancer in the breast, or in the tongue, or in the rectum, is not obvious. We do know, indeed, that sometimes this local development is due to an accident. I remember a gentleman who fell from a pony and received a blow upon the abdomen, which produced a swelling. Six or seven weeks after the blow the tumour was opened by a surgeon, but when I was subsequently called in, I found it to be colloid cancer, which had spread and invaded the organs of the abdomen, and the patient died. There was no antecedent history of cancer, and undoubtedly the appearance of the cancer dated from the blow. Again, we know that cancer has a tendency to attack organs in an imperfect state of development. A mamma, for instance, that has never been available for its proper use will by-and-by, in middle life, become a seat of cancer. I am acquainted with a case in which this took place in two generations in the same family. In the first the mother had a mamma which had never developed during lactation. She died at an advanced age

with a hard atrophied scirrhous tumour in her left mamma, but she never had cancer. The daughter had a tumour of the same sort in the same mamma, in exactly the same situation. The first history in her case, as in the case of the mother, was that the breast did not develop during lactation. Whilst milk came in the right breast, none, or only a small quantity, came in the left, and by-and-by this imperfectly developed mamma became the seat of scirrhous cancer. Apart, however, from these exceptional cases, the question why cancer should develope itself in one or other particular locality has yet to be worked out.

In conclusion, it appears to me, as I have already said, that this great debate, which has been of such interest to the Society, shows that there is no such great divergence between the local and the general school with regard to the origin of cancer, as some of us have supposed. And very much the same thing may be said with regard to treatment, if I may be allowed to use that word in this Society; for the practical inference which I should draw from the general course of this debate is, that cancer—whether it spread by transference of cells to distant parts, or by impregnation of surrounding tissues—ought, if it can be dealt with locally at all, to be removed at as early a period as possible. I have confined myself in the remarks which I have made, and which I feel to be very crude, to the subject of surgical cancer; but I will venture to say that if we had taken into consideration the subject of medical cancer, we should have found still stronger grounds for regarding cancer as a constitutional disease.

Dr. Creighton.—If I may venture, as a visitor here this evening, to occupy the time of the Society for a few minutes, I should attempt to give a short account of certain investigations of mine which have just been referred to by Dr. Greenhow, and which also formed an illustration of Mr Simon's argument on the first night of this debate. More than a year ago I commenced an investigation on the pathology and causation of cancerous tumours, and, after feeling my way for a little time, it appeared that the study of secondary tumours, especially in the liver, whether they might be called cancerous or sarcomatous, or whether they belonged to any other variety, was likely to throw more light upon the pathology of cancer than an investigation into tumours occurring in primary situations.

It so happened that the material that came in my way proved favorable to this course. The tumours occurring in the liver which I first examined were similar in external characters, but the primary tumours were of considerable variety. In one remarkable case, a new growth in the ascending colon had the structure of a tubular gland. Another was a case of spindle-celled sarcoma; the growth existed in various parts of the body in the subcutaneous tissue. Another was an epithelial growth in the rectum; a fourth was a myxomatous tumour of the femur. These, along with others, presented a considerable variety, and embraced a wide range of epithelial and connective-tissue structures. In these cases I found that the point of departure for the liver tumour was the liver-cell itself, and that, not in the way of proliferation or multiplication of nuclei, but in the way of endogenous cell-formation; that is to say, by vacuolation of the protoplasm of the liver-cell, and the differentiation, so to speak, of the solid product that survived the vacuolation. This endogenous mode of cell-formation in the nine or ten cases that I examined was pretty well exemplified in all its varieties; so that if one were to attempt to write the natural history of endogenous cell-formation it might be done from those cases. The conclusion I arrived at was that from liver-cells there might develop, not only various kinds of epithelial cells, but also connective-tissue-cells, including spindle cells, giant-cells, and the cells of myxomatous tissue, according to the nature of the primary tumour. In all these cases the secondary tumour had a remarkable resemblance to the primary tumour. For example, with regard to the tubular-gland structure which occurred in the ascending colon, the structure of the primary tumour was reproduced exactly in the liver, although it was not at all points equally developed. Again, with regard to spindle-cell sarcoma, the spindle-cells were exactly the same as in the primary tumour, and even the melanosis in the primary tumour was to a certain extent continued in the secondary. In a case of giant-celled sarcoma, a sort of epulis growing from the upper jaw, there was in the primary tumour a remarkable arrangement of the stroma which was reproduced in the secondary growth. Indeed, the similarity between the primary and the secondary tumours was irresistible. When these facts are looked at, it appears that the relations between primary and secondary tumours is comparable to no other relation in nature than that of parent and offspring. When the exact histological process is looked at more closely—namely, vacuolation—there is an

an additional argument in favour of supposing that the influence from the primary tumour which results in the formation of the secondary may be compared to what Mr. Simon called a spermatic influence. It may be a little fanciful, but certainly there is some ground for supposing that the changes that take place in the ovum immediately after impregnation might very well be compared to the vacuolar changes in the liver-cell when it begins to assume the character of a tumour-cell; so that both from the histology and from general considerations one is led to suppose that the secondary tumour is produced by an influence emanating from the primary tumour, and that that influence may be compared to a spermatic influence. So far that is a constitutional element in cancer, but while that is the case as it regards secondary tumours in the liver and elsewhere, I doubt very much if the same spermatic influence, or any influence of a similar kind, is to be postulated in accounting for primary tumours. I think it is incumbent on us to look for an explanation in the circumstances of the particular region in which the primary tumours occur—for example, in the mammary gland. The case mentioned by Dr. Greenhow is, I think, somewhat illustrative of that point—the case, namely, where the particular mamma which was not employed in lactation became the seat of tumour. From an examination of a considerable number of mammary tumours I have been led to form a pretty strong opinion, which, however, I do not like to express definitely as yet, that the process of involution and evolution of the mammary gland will be found to account, not, perhaps, entirely for the existence of a tumour, but for the particular combination of connective tissue and epithelial tissue which so puzzles histologists in investigating those growths. Again, the stomach and the os uteri, which, I think, according to the investigation of Dr. D'Espine, of Geneva, have been proved to be the most frequent seats of primary cancer, are at the same time distinguished for their remarkable liability to catarrh. It, no doubt, seems a great leap from catarrh to cancer, and it may turn out that the idea here mentioned is untenable; still, I believe that it is to such ordinary conditions as catarrh of mucous membrane on the one hand, or the involution of the mammary gland on the other, that we have to look for the explanation of tumours occurring in those regions. Whatever is constitutional is developed from the primary tumour after it has attained a certain maturity, and the constitutional element is represented in the occurrence of secondary tumours. It is super-

fluous, as far as I can see, to refer the whole cause of cancer to a mysterious constitutional element so long as there are so many vicissitudes of the body, vicissitudes of cellular life, which may be the point of departure of cellular growths. As regards the mamma, those vicissitudes are remarkable. The process of involution and evolution is very extraordinary in itself. Unfortunately there is very little information to be had about the exact nature of the changes. I am confident, if we knew more exactly the particular transformation that the mammary tissues undergo, we should find many analogies to the different forms of cancer occurring in that gland. Sometimes it is almost purely cellular or medullary, at other times more or less fibrillar. In the stomach and os uteri the difficulties are still greater; but when we consider that, apart from tumours of the connective-tissue series, most "cancers" are developed in organs which have a secreting function, it is incumbent on us to take into account the fact of secretion. The secretion itself is performed by the agency of cells, and probably at the expense of cells, and in many cases there may be, besides the vesicular product, a cellular product. That is the line in which my investigations are tending at present, but my opinions are too little matured to be expressed more fully here. I content myself with pointing out the circumstance that there is a considerable body of evidence for the constitutional element in cancer after it has attained its primary development, or, in other words, that there is in the body after a certain time an influence which may be justly called a spermatic influence, and which is the cause of tumours in distant parts.

Mr. Rivington.—The question of the relation of cancer to the organism may advantageously be narrowed to these two issues—First, is cancer of local or constitutional origin? Secondly, if it be local or if it be constitutional, or a mixture of the two, what are the elements out of which it arises? Questions concerning the nature of malignancy, causes of degrees of malignancy, geographical distribution, phenomena of cancer in the quadrumana and lower mammalia, and other points which have been touched upon by preceding speakers in a highly interesting and instructive manner, are all secondary and subordinate to these main issues. The whole burden and gist of the present discussion rest on the primary manifestation of the cancerous growth. For, given a mass of the structure of a

cancer containing elements rapidly growing, cells and nuclei with locomotive properties, and given the mode of formation of that mass, and all the secondary phenomena, the local multiplications and invasions of tissue, the passage into the blood and into the lymph, the appearance in other and distant parts of the body, the recurrences after removal, the infection of the system, the cancerous cachexia and ultimate death, would appear to admit of ready and intelligible explanation. But that which is the great mystery is, how does such a mass come into being? Is it a local or constitutional manifestation? Before endeavouring to reply to this question—as I must do very briefly—let me again draw the attention of the Society to the extreme importance, not only of defining terms, but of all speakers adhering to one common acceptation of those terms. It is almost proverbial that confusion of thought and unprofitable argument have arisen in controversies from time immemorial in consequence of disputants not employing in the same sense the terms expressive of the subjects of controversy. In the debate on tubercle, in the discussion on pyæmia, at another society, much of the advantage of the speeches was lost because the words were used sometimes in a limited and sometimes in a comprehensive sense; and as Dr. Payne has already pointed out that preceding speakers have not employed the terms "local" and "constitutional" with the same meaning, I deem it advisable to state the interpretation of those terms to which I will adhere, as deducible from the addresses of Mr. De Morgan and Sir James Paget. By local origin of cancer I understand origin in a part or organ out of the elements of the tissues of the part or some neighbouring part, with the blood of normal constitution, or certainly free from any foreign morbid material. By constitutional origin of cancer I understand origin in a part, not out of (for that might give rise to misapprehension), but in connection with some pervading element, whether that element be of tissue or of blood. Dr. Moxon objected to the use of the term "constitutional" altogether, because of its ambiguity. Nothing, he said, was so constitutional as that which is local; there is nothing so constitutional as the great toe. No doubt there is some justice in these remarks, but if we define the sense in which we are going to use the term constitutional, and adhere to that sense, no ambiguity can arise. First, then, is cancer of local origin? In reply, let me say that I am a localist, and I am not a localist. I am not a localist in the sense in which Dr. Moxon is a localist. Dr. Moxon's formula

for the production of cancer was this—there is a healthy body; a cancerous tumour arises in some one part, and from that parent tumour all the secondary cancers appearing in the body are produced. I am not a localist in this sense, because I believe that there are some secondary cancerous tumours which are only secondary in point of time, but not secondary in point of relation to the primary tumour; they would have arisen even if the primary tumour had not appeared. But I am a localist in this sense, and I presume that most if not all of us are localists in this sense, that cancer is a modification of the tissue elements of the part in which it occurs, or of some neighbouring part. I say of some neighbouring part to cover such cases as that of an osteoid cancer arising, not in a bone, but in a neighbouring intermuscular space. There is nothing peculiar in the cancer structure. The cells—what are they? Either conceivable or actual modifications of the cells of the part, epithelial, connective-tissue-corpuscles, or white blood-cells, and it may be in some kinds of cancer of all three of these together. In the stroma there is nothing peculiar, and so much is this the case that where we have an epithelioma in a mucous membrane covered by squamous epithelium the type of the cells is squamous, where the epithelium is columnar the type of the cancer.cells is columnar. Dr. Moxon told us that rectum cancer was rectum tissue, and he has made the interesting observation that the liver-cell develops into a cancer-cell, an observation just confirmed by the preceding speaker. Even Sir James Paget admits in his lectures that there is in cancer no new type of structure, no new laws of nutrition. All the heterology consists in the multiformity of elements, the disorderly crowding of elements, the abnormal growth of natural elements. The question then arises, how does this disorderly crowding and this abnormal growth of natural elements occur? I turn for a solution of this question, first to the localists, and this is exactly where the localists seem to me to fail. I might illustrate this by one or two passages from Mr. De Morgan's address, but, for the sake of brevity, at this period of the discussion I will refer to only one. In illustrating the growth of cancer from malignant enchondroma Mr. De Morgan says, "Once admit that the cartilage cell-holding tissue can throw off the laws which regulate natural growth, and I do not see where or why it becomes necessary to invoke any other aid." Of course not; if we admit that the cells have the power of throwing off natural laws there is no need for further discussion. But cells cannot of

themselves throw off natural laws. So long as they are placed in normal conditions they will obey the normal laws of growth and development, and it is only when they are placed in abnormal conditions that they will develop abnormally.

But the whole question under discussion is, what are the abnormal conditions which cause the cells to grow and develop abnormally? Cancer was called by Mr. Hutchinson a rebellion of cells, and no doubt it may be so; but what is it that causes the cells to rebel? He compared cancer to the Celts, whose disposition it was to throw off the shackles of orderly government and to aggrandise themselves; but even the poor Celts would continue peaceable citizens and exhibit the virtue of self-restraint if it were not that they were constantly supplied with some unwholesome moral pabulum from some *fons et origo mali*. What, then, have the localists to offer us in explanation of the rebellion of cells? Nothing but local irritation. Our minds contain a saturated solution of cases of cancer arising from local irritations. We are all familiar with the epitheliomas of lips and tongue arising from the irritation of pipes and teeth, chimney-sweeps' cancer from the constant contact of soot, cancer arising from the worry of old ulcers and the fretted scars of old burns, and we might almost extend the list indefinitely. We might explain cancer usually occurring at the beginning and end of the alimentary canal, and missing, as Sir William Gull observed, twenty feet of small intestine, by the facts of the more irritating nature of the secretions of the parts, the longer continuance of their contents in contact with them, and the greater obstruction to their passage at the pyloric orifices of the stomach. But even if we could refer all cases of cancer to some source of local irritation, we should only be one step nearer an explanation; we should still require to know how it was that local irritations could cause an abnormal development of natural elements, since we know that this is not the ordinary effect of injury or irritation. In this failure, therefore, of the localists, I turn to the constitutionalists, and the constitutionalists certainly bring forward some most powerful and impressive arguments to prove the presence and importance of a constitutional element in cancer. Sir James Paget's arguments from the peculiar manner of inheritance of cancer, that it is transmuted in transmission, the cancer of the breast of the progenitor becoming the cancer of the stomach in the offspring, or the cancer of the axillary glands, or cancer of the eye, or, indeed, of any

other part liable to the growth of primary cancer—his argument from the effects of injury in the production of cancer, just as the abnormal results of injury in cases where there is a gouty, scrofulous, or tuberbular, or syphilitic taint, prove the presence of a constitutional taint—his argument from the peculiar manner and frequency of recurrence of cancerous tumours, the secondary cancer not attacking so often the same part as some distant part—all these arguments, involving the facts of multiplicity and indifference of primary seat, did to my mind prove that which I should have thought no one could possibly have denied, namely, that there is underlying all cases of primary cancer some one common element, in connection with which cancer arises, whether the element be one belonging to tissue or one belonging to blood. But they do not in the least degree prove what that element is, and therefore Sir James Paget had to select his element, and the objects from which he had to select were some specific morbid material, either in the blood or in the tissues, or some morbid condition, either of the blood-vessels or the all-pervading nervous system, or the connective tissue—in other words, the lymphatic system. I pass over the blood-vessels, as they are nothing without the blood, and confine my attention entirely to these three objects, a morbid material in the blood or in the tissues, and a morbid condition of the nervous system or of the lymphatic system. Sir James Paget said that he could conceive that there might be some morbid material in the connective tissue, but he thought it safer and farther removed from the unknowable to place it in the blood. With all due deference to so great an authority, I should have thought that, if it were necessary to assume the presence of some morbid material, it would have been safer and nearer to the knowable to locate it in the tissues. For these reasons—what we inherit from our progenitors is mainly types of tissues. We may, of course, inherit peculiar blood-corpuscles and peculiar qualitative differences of albumen or fibrin; but what we are chiefly distinguished by is peculiar types of tissue. Moreover, the blood is constantly changing and constantly being purified by the excreting organs, so that any foreign morbid material which had entered the blood would soon be removed from it, either by excretion through the natural organs or into the tissues. On the side of the tissue we have the analogy of hydrophobia, if the facts be correct that a specific morbid material or morbid condition may continue in a part for a lengthened period.

But that which is to my mind inconceivable is that any morbid material whatever could float about in the blood for an indefinite time without giving rise to a manifestation of some kind, that it should remain in the blood waiting for an appropriate nidus, and perhaps never manifest itself in the progenitor, but make up for its laxity by appearing at an earlier period in the offspring. The analogy of all morbid conditions of blood is against such an hypothesis. The analogy of hereditary syphilis is against it. Hereditary syphilis is the only constitutional disease out of those referred to by Sir James Paget which we should be prepared to admit to be an hereditary blood disease. It may, of course, be at first a disease of tissue, but the blood at all events is affected soon after birth; and what does hereditary syphilis teach? It teaches us that where the blood is affected at or soon after birth a manifestation will take place at an early period, within three weeks or a month, as soon as the altered conditions of nutrition have time to come into play, and this is exactly the teaching of all morbid conditions of blood; the manifestation occurs in a very definite period after the infection. But in cancer the local manifestation may occur in the first decennial period, the second, the third, the fourth, the fifth, the sixth, the seventh, or not occur at all, but pass on and show itself, as I said, in the offspring.

Another great objection to the view of Sir James Paget, of an hereditary morbid blood material, is that it does not account for the non-hereditary cases of the disease. With all Sir James Paget's great ingenuity and vast experience and opportunities for observation he cannot bring his proportion of hereditary cases higher than one in three. I should be quite willing to acceed to him two out of three, or still more, if he would leave me a margin of non-hereditary cases; and then I would ask him, how does cancer originate in the non-hereditary cases? It cannot be due to a primary morbid material in the blood. If any material is formed at all, it is either formed by the assimilative organs out of the food, which no one perhaps would admit, or it is formed in the tissues; and if it can be formed by the action of the tissues, why assume the transmission of any blood material at all? But I do not believe in the existence of any foreign specific morbid blood material, either in the blood or in the tissues, hereditary or non-hereditary, and therefore, omitting for the sake of condensation much that I should have liked to state in reply to Sir James Paget's arguments, and especially in

reference to the analogies of gout, scrofula, and tubercle, I will pass on to the nervous system, and with reference to that I will only say that, whilst I entertain the most profound sense of the importance and influence of the nervous system in nutrition, as shown by facts familiar to all, which I need not recapitulate, we have not sufficient evidence to prove that the actions of the nervous system alone could give rise to a cancer. And now all that there is left is the lymphatic system, which includes all the connective tissues and all the serous and synovial membranes in the body, and all the interstices of organs. The lymphatic system has been well described as one great unravelled gland spread throughout the body. I think that we can all understand that a part of this gland might fail, or the whole of it, and fail either temporarily or permanently. The office of this gland is to my mind to collect and reconvert into blood those materials in the tissues which can be no longer of functional service in the part, but are still capable of life, growth, and development. Now, supposing that the lymphatic system should fail in its office, that those elements of tissue which ought to be taken up and renewed cannot be taken up but are left in the part, would not a tumour result? I do not pretend to bring before the Society a fully developed hypothesis, and I put the matter tentatively, for I came here rather as a learner than as imparting information, and I should like to hear something about this from Mr. De Morgan when he comes to reply. The considerations which direct my attention to the lymphatic system are briefly these:—the constant appearance of cancer in the connective tissue of a part, and in the interstices of organs, that is, in the primary part of the lymphatic system; as, for instance in the testicle and in the breast, and in intermuscular spaces. The proper glandular structure is at first distinct, and perhaps spread out over the tumour. The not very infrequent origin of cancer is the lymphatic glands, and not only in one part, but different parts of the body, and not only that, but there are instances referred to by Sir James Paget in which the whole lymphatic system has quickly become cancerous. How are you to explain such cases? Either cancer must be a blood disease or a failure of the lymphatic system. To this I might add the frequent recurrence of cancer in the lymphatic glands at a considerable interval of time, perhaps some years afterwards. Again, cancer is a disease of parts where there has been great activity and constant tissue changes—alternate increase

and retrogression, development and decay, evolution and involution. In such changes an immense stress of work must be laid upon the lymphatics. Cancer is also a disease of imperfect parts and very liable to arise where there are frequent and profound tissue changes in consequence of local irritations. An old ulcer that is constantly healing up and breaking out again is very liable to cancer. We may suppose that the lymphatic system gets worn out. If Sir James Paget would abandon the blood hypothesis, I believe he would embrace a lymphatic hypothesis, for he said that he could conceive that cancer might be due to a morbid state of the connective tissue, and a failure of the lymphatic system would really account for many phenomena that now puzzle us. It would explain the temporary freedom from and ultimate recurrence of cancerous growths, the subsidence of enlargements of lymphatic glands on the removal of the growths, the apparent cessation of the cancerous constitution, the occurrence of tubercular disease of the lung in a patient who had already suffered and was suffering from a cancer of the breast. It would explain the transmutations in the transmission of cancer, for the appearance of cancer in the stomach or other organ in the offspring when the progenitor had suffered from a cancer of the breast would really be analogous to the inheritance of a fatty tumour, not in the same part but in some other part of the same tissue. It would also explain the occurrence of cancer late in life, when the lymphatic system was worn out, the reappearance of cancer after removal not in the same part but elsewhere, and the skipping of one generation and passing on to the next. It would explain also the occasional occurrence of the cancerous cachexia before the appearance of the primary tumour, for the lymphatic blood-forming system may have been working badly long before the occurrence of a tumour. And now before sitting down I should like to read to the Society a remarkable case quoted from Bruch, in Sir James Paget's lectures. It appears to show how repeated irritations of the lymphatic system may ultimately end in a cancer. "A woman had a child at eighteen years of age. The child died when it was a month old, and her breasts were left to the disturbance which usually ensues in prematurely arrested lactation. At the age of thirty-four she received a blow on the right breast. This was followed by no manifest change of structure, but for some days by severe pains, and then for a much longer time by feelings of swelling and tension at the menstrual periods; at thirty-nine she

received another blow on the same breast, which was followed by an increase of pain. Soon afterwards she was exposed to cold, and then there ensued erysipelatous inflammation of the breast followed by induration of the mammary gland. This, however, continued without change for four years, but then after menorrhagia a tumour appeared in the breast. When this was removed or partially removed it was found to be, not a cancer, but a cystic tumour with growths from the cysts. She remained well after this, the wound having perfectly healed, for twelve years more, and in the interval she ceased to menstruate, but now, when she was fifty-five years old, after having a whitlow and inflamed lymphatics of the right arm, another tumour formed in the breast which had every appearance of being cancerous. It was removed, but it recurred and ended fatally." In this case the coming cancer seemed to cast its shadow before. Such a case is to my mind an indication that there are many kinds and degrees of failures of the lymphatic system, and that while innocent tumours may arise from a similar cause, the imports into the tissues being greater than the exports, the cancer may possibly prove to be the highest form of expression of lymphatic incapacity.

Dr. Broadbent.—I came here, sir, with certain ideas which I thought were clear. I thought I had derived from the discussion hitherto certain definite notions. The first speaker this evening, Dr. Greenhow, did something towards disarranging those ideas by speaking of hereditary, constitutional, and general, as if they were synonymous terms, and as though a constitutional disease were necessarily a general disease. The last speaker has completed my confusion. I believe, however, if one had time and opportunity to analyse this long speech, it would be found that his conclusions are very nearly identical with those expressed by previous speakers; I think also he contradicted himself two or three times. He began by saying that, given a disease having certain characters which we recognise in cancer, all the subsequent effects are explicable, on the ground of structure. He went on afterwards to say, that notwithstanding the evidence of extension from the original locality, as shown by Dr. Moxon at a previous meeting, a few exceptional cases of simultaneous evolutions are to be set against all these evidences. I think it may be of some little service, before I mention one or two things that I really came to say, to refer back to a

few simple deductions from the course of the debate. It has been apparently forgotten by speakers to whom I have referred that cancer is not a species, but a genus, and that we cannot, by a few remarkable cases, settle the pathology of the disease. With regard to the term constitutional, I think a very excellent definition of it was given by Dr. Payne, who said that constitutional diseases are those in which internal causes are recognisable as distinguished from external causes. If we examine cancer by this light, we find every phase of constitutional condition. In some cases the constitutional condition is everything, in some the local condition is, we may say, everything. Sir James Paget was remarking the other evening that chimney-sweeps' cancer had almost disappeared, and that it was apparently traceable to the soot derived from a particular kind of coal. Here, at any rate, we may say that the local causation is tolerably clear. A constitutional condition or constitutional disease may be hereditary or it may be acquired; but then, supposing a disease to be constitutional in this sense, that it has its origin in some internal tendency, that does not imply that the internal tendency is a general one; and when Mr. Rivington places the origin of cancerous tumours in the tissues, I think it would not be difficult to show that he grants the whole case of the localists, that there is a single spot of tissue which from some cause or other begins this process, and it is the character of the changes which are initiated, the retention by the cells of their embryonic characters, that constitutes the malignancy, so that the malignancy has a local origin, although the tumour may have its source in a general predisposition. One need not go over the ground that Dr. Moxon has so well covered in regard to the distinction that exists between a local and a general origin of the disease. We do not find, I believe, that cancer has its origin in a general carcinosis. The cachexia results from the effects of local manifestations. There is one point to which I wish to refer in reference to the hereditary transmutation of the form of the disease, as evidence of its being a general disease in the sense of a blood disease or carcinosis. Of all diseases which are transmitted hereditarily there are no more striking instances than those of the nervous system, but we do not find in hereditary diseases of the nervous system (which are clearly diseases of tissue, not of blood) that the particular form is necessarily transmitted. In looking back for neurosis in a family we should have as evidence of the neurotic tendency epilepsy, migraine, neuralgia, insanity, and

a variety of other disorders. Sir James Paget, able as his argument was, made one lapse. In referring to the frequency with which the mammæ and the uterus are attacked in the female, and accounting in this way for the greater frequency of the disease in the female than in the male, he said that cancer is a disease of old tissue, and the breast and uterus are prematurely old, inasmuch as their function is over long before that of the rest of the body. This is clearly making it a tissue disease, not a blood disease, which, if I may say so, is the point at which the localists are aiming. It is not the blood that is old, it is the tissue. It seems to me that that alone destroys the whole of Sir James Paget's argument for the blood origin of the disease. With regard to the arguments and speculations about the lymphatic tissue, if I were to go into that question, I think I should be at issue with reference to almost every fact that was stated. I do not see why the lymphatic tissue should spontaneously go into disorder and riot any more than any other tissue; besides, the lymphatic tissue will as much require local causes as any other tissue.

Mr. Rivington.—I did not mean to say the lymphatic tissue, but the lymphatic system.

Sir W. Jenner (President).—I congratulate the members of the Society upon the course which the debate has taken, and upon the admirable mode in which the views of the various speakers have been brought before the Society. I think, however, that three of the addresses have stood out "beyond compare"; they were addresses such as any society in Europe might have been proud to listen to. I refer to the address with which Mr. De Morgan opened the discussion; that of Sir James Paget when he replied to it; and the address of Mr. Simon. In listening to those addresses, whatever might be our individual opinions, we might feel proud that we, too, were members of this Society—that we were English pathologists. We feel proud for the science that has produced three such men. I should not have addressed the Society at all upon this subject, for I have spoken but little, as you know, since I have held this office, because I felt that, as a histologist, I was rather a learner than a teacher, desiring to learn from those actually engaged in the practical working out of this subject; for I, in common with all those who have been long in practice, have ceased, of course, to pursue that special mode of investigation; and I felt that, if one took it up for a moment, one was quite as likely to rush into error

as to drop into truth. I have, therefore, sat here quietly listening, often not agreeing, often thinking that those who spoke were wrong, and I may say that I have had the wisdom of my silence impressed upon me by some of the remarks that have fallen from some of the speakers in this debate. I have heard certain statements; I own I am not prepared to deny their truth; that the speakers believe them to be true I have not the least doubt, but that they are accurate observations I confess I have a sort of lingering doubt.

For example, Dr. Moxon, for whose remarks I have a most profound respect, and who, I am sure, is always listened to in this Society as he deserves to be, stated that he had found the crypts of Lieberkühn in the liver. Now, the crypts of Lieberkühn are not mere cells. I can understand the germs of those cells being there, but that there should be identically the same arrangement—that there should be the basement-membrane there—that there should be a complicated structure with its vessels (and without that it would not be the crypts of Lieberkühn at all), I cannot quite understand. I do not say that he is not correct, but I feel that I should not be a judge if I saw it myself. I should think that I had it subjectively in my own mind, and that I probably projected it on to the field of the microscope, and that I saw it objectively, so that if I saw it myself I should mistrust my own observations.

There are two other points to which I should like to refer. Mr. Hutchinson stated, as an argument in favour of the local origin of cancer, that if surgeons did not believe it they would cause the death of a great many patients. You are not to believe it because it is true, but because it is necessary that you should believe it in order to operate. Now, I think that is a very bad argument. It is true or false. If it be true that cancer is local, it would still be a question how far it could be removed by operation. That is a question of numbers—a thing to be settled, not by argument, but by fact.

The next point was that referred to by Sir William Gull, namely, that the blood is an indifferent substance, and that it does not very much matter what our blood is. Now, against this doctrine I would protest with all my might. I would appeal to any of you who have ever examined the blood in a truly malignant disease—I do not mean cancer, but I mean, for instance, malignant smallpox, where you could not point to a single special lesion of tissue, and where the patient dies within a day or two. I have seen, in such cases, a

solution of hæmatosine oozing from the eyes, nose, mouth, chin, and every organ and outlet of the body, and the patient has died without a single spot on the surface. Is that blood unchanged? Is that condition of blood a matter of indifference? Surely every tissue in the body must be dependent for its nourishment on that blood, and if it is in such a condition, it must surely interfere with the patient's life. What do you see if you put a drop of such blood under the microscope? When I was engaged in this work I saw repeatedly that the structure of the corpuscles was changed, and not only their structure, but their relation to each other. They ceased to form themselves into rouleaux, and they aggregated themselves into bundles, simple heaps. The liquor sanguinis was dyed with a solution of hæmatosine. Then take the cases of spontaneously coagulable blood—the blood coagulates again and again, until, at last, it coagulates in some part, a channel through which is essential to life, such as the lung, the pulmonary artery, and the brain, and the patient dies. Here there is no change of tissue in the vein, until it is subsequently inflamed from over-distension. I cannot regard the blood as an indifferent fluid. I regard it as a fluid of the highest importance—not merely the corpuscles, but the clot itself. It is not merely the solid particles that are coagulable, but the liquor sanguinis. Take, also, those cases of malignant disease—smallpox, erysipelas, and malignant typhus, where the fibrin scarcely coagulates, where the clots are of the loosest description. I think these facts are sufficient to put aside altogether the statement that the blood is an indifferent fluid.

Again, Sir William Gull said he had always taught that, if a man were all blood, he could not have typhoid fever. Now, in the first place, I cannot conceive of so sanguineous a mass; but, if I could, I am not sure that, if the poison of typhoid fever could commingle with that mass, there would not be a change take place in it which would be the first step of typhoid fever. But this I may say, if I could conceive of a man who had no blood, who was all solid, I am quite sure he could not have typhoid fever. If he could not have typhoid fever if he were all blood, and if he could not have typhoid fever if he had no blood, then, as we are made up of blood and solids we ought not to have typhoid fever at all, and therefore (as some one said to me) "the worse for typhoid fever."

There was another point referred to by Sir William Gull. He said (and I have long said the same thing) that diseases could not

originate in the blood, because they originated in the ovum, being communicated by the parent to the ovum, when there was no blood present. There was no blood in the germ, and, therefore, as the germ was impregnated, so to say, with cancer, it could not be a disease of the blood. Well, primarily not. Of course there is something preceding. But an adipose tumour is a disease of adipose tissue. Now, it is clear that the father has given adipose tumour to the child before it has adipose tissue, and that is all that would be meant, that, in the process of differentiation, the blood became especially the seat.

Let me now say a word as to the question of constitutional and local. I think, with many speakers, that a clear understanding of the meaning of these words is all important in the consideration of the question before us. I do think that some of those who have spoken have been a little lax in this matter. I will endeavour to express what I mean. The father, in impregnating the ovum, gives to that ovum a power of development, a power of differentiation (which I cannot admit to be a bad word); and, in differentiating into the various structures of the body, it will be seen that every structure partakes more or less of the qualities of the structures of the parent that impregnated the ovum. When a person has an adipose tumour, you say that the adipose tumour was inherited, but it was only a part of the general inheritance. He inherited the colour of his eyes, the shape of his nose, the height of his body; he inherited the power of growing more or less into the shape of his father, and not only so, but each tissue possessed the power of growing on and on in the same direction in which the parent grew. The father impresses on the child, not merely what is there at the moment of impregnation, at the moment when each tissue is differentiated into that special tissue, but he gives to that special tissue—that is, to that aggregation of tissues—the power of growing on that he himself possessed, and the peculiarities that he possessed. He also conveys to the ovum, or to the child as it subsequently becomes, the date at which it shall die, and not merely so, but the date in which each of the several tissues shall die; that is to say, the order or the date of degeneration, and, what is more, the mode of degeneration.

In looking round this room, I see, much, perhaps, to the sorrow of many of us, many bald heads. In how many families do we find persons getting bald about the same time. Now, what is that but

the death of the parts that produce hair-follicles? I say, that the mode of developing and dying is giving by the parent at the instant of impregnation. There is also given the power of growing and developing in special ways. That is given to all the tissues. It is something common to all, and it is that which we emphatically term the constitution of the person. When, then, I speak of cancer being a constitutional disease, I mean that it is an outgrowth or a local development, possibly in every structure of the body, not merely, as Mr. Rivington would put it, in the lymphatic system, but, as Sir James Paget would put it, in every part of the system. That, I say, is conveyed at the moment. The parent himself may be unconscious that he has it. I may mention a case in illustration of this. An Italian gentleman came to me about twelve months ago. He was dying of cancer of the tongue. He was in the last stage of the disease, and in a most horrible condition. He had been under some one who had promised him a cure. He had then gone to Sir James Paget, who had not promised to cure him, but had told him that nothing could be done. This poor man told me, as well as he could, partly writing it down, that he had been cruelly used by Sir James in being spoken to so plainly. At the same time he wished me to speak plainly to him. I told him, of course, that he would die. Then he told me the reason why he came to me. He said: "You have forgotten me, but you may remember that I lived at such a place, and that you came to see my child, who died of cancer." Now, that child, twenty-two years before, had died of cancer when two or three years old. I had made a *post-mortem* examination, and there was cancer in various parts, disseminated, as it generally is in children. Twenty-two years afterwards the father died of cancer of the tongue. Now, it seems to me that the father had given to the child, not merely a power of growing in his own similitude, but also a power of developing in this particular direction that we term cancer. I have no doubt that most persons present have seen instances of the hereditariness of cancer in their own experience.

Dr. Moxon told us that Mr. Birkett had told him, or that he thought he had told him (but he hoped he was not misinterpreting him), that cancer was not hereditary in his experience. Now, I think that such a statement cannot weigh for a moment against Sir James Paget's and our own individual experience. I say it is hereditary. It is also true that constitutional conditions are

acquired. I suppose I need hardly ask a surgeon here whether he has not hesitated to touch a patient with a knife, conscious that, if he did, the case would go badly; The general health was such that the man would surely die if he were touched.

Again, almost every one engaged in general practice, at any rate in hospital practice among children, will have seen such cases as I am about to refer to. It was not at all uncommon to see at the Children's Hospital mothers who brought children so out of health that they said: "He never pricks or scratches himself but the place festers." That seems to me to be a general state which is acquired. So I think there is a general and, in this sense, a constitutional appearance of cancer; that there is a general condition affecting every structure of the body; the equilibrium of nutrition is disturbed and the body bursts locally into cancer. Now, why does the patient burst into cancer here and there at many places? We know that local injury will produce it; that a disturbance of nutrition will take place which will eventuate in cancer that a blow. No one disputes for a moment the three propositions from Dr. Moxon advanced; viz. that cancer spreads at the spot; that cancer affects the lymphatic glands next to the primary seat of the cancer; and that cancer often spreads in the course of the veins. He said, if we admitted that, we ceased to be constitutionalists. I do not admit that inference. A woman has an abscess in the breast; the lymphatic glands enlarge in the axilla; they may suppurate or not, or they may subside; they may inflame and subside, and the part is restored to health. Something is absorbed; it is not necessarily pus; there is a disposition in every part to burst forth into cancer when an exciting cause is applied; something is absorbed from the part which irritates a gland, and, in the constitutional state of the patient, cancer is produced instead of abscess or extravasation of blood, or thickening of a tissue. Whether it goes by the lymphatics or the veins is a matter of insignificance: it would not develope into cancer unless you had a primary condition in the patient; viz. a disposition under irritation to form cancer.

Reference has been made to spreading into adjacent parts, and it has been said that the cells had wandered from the original cancer into a particular cancer and there developed. Is it necessary to admit that? Mr. Erichsen likened these cells to the Wandering Jew. It struck me at the time that they were, but, perhaps, in a

different way, very like the Wandering Jew. Many persons believe in his existence; but I have never known any one who had seen him.

Mr. Simon referred to another form of growth, and he said he had been asked to remove a simple hypertrophy of the skin which recurred. He then passed down needles, and around each puncture there came new hypertrophied skin. Now, Mr. Simon did not suppose, nor would any one else, that these hypertrophies were due to any Wandering Jew. He said he believed he had not removed the whole part in which the hypertrophic tendency existed. So it is with cancer. Surgeons have not removed the whole part in which the cancerous tendency existed, and the irritation, whatever it might be, was sufficient for the renewal of the growth. At any rate, that is a possible explanation. One thing struck me very much. Where the needles were inserted, there the hypertrophied tissue occurred. That is exactly what you find when you have cancer. I had a case in the hospital not long since in which a man had a number of cancers diffused throughout the body and in the peritoneum. There was fluid in the abdomen, and a great collection of gas in the intestine. The intestine was punctured twice with a fine needle, and the punctures after death were found surrounded with a cancerous growth. I think Mr. De Morgan has mentioned a similar case. It is common enough. It seems that the question of extirpation will still be left to the surgeon. It will not be decided *à priori*. These secondary growths, according to the view I have taken, may be developed from a something, not necessarily a germ—a something taken up (which irritates the part) in consequence of the constitution having this peculiarity.

Mr. De Morgan.—I am much gratified at the discussion which has taken place on the paper which I had the honour of bringing before the Society; it has been most interesting and instructive.

The ground which has been gone over is so extensive, however, that I feel it would be quite impossible for me to cover it in the time to which I must limit myself.

I may state generally that throughout the discussion, and perhaps more especially while Sir W. Jenner was addressing his admirable remarks to the Society, my feeling has been that every argument adduced in favour of the constitutional origin of cancer applied with equal force to the constitutional origin of any—the

simplest outgrowth that could be found in the body. Whatever argument he could advance in proof that cancer was a constitutional disease, I would advance in proof of a wart or a fatty tumour being a constitutional disease. Indeed, I am prepared to accept and adopt Sir W. Jenner's argument as strongly corroborative of the view that there is nothing special in the development of cancer, but that it springs up in obedience to the same laws which regulate the growth of a fatty tumour or the fall of a hair. Sir J. Paget assumes from my expressions that we are in accord with regard to the constitutional origin of cancer, and this has been assumed by other speakers. I remarked that "in one sense, and to a certain extent, I must admit that this belief (in a constitutional origin of cancer) is well founded;" and again, "the view which I would maintain is, that though local in its origin, there is in some, probably in all cases, a predisposition to the disease, which may *possibly* be distributed through the system, but *much more probably* has its seat in some one among the tissues of the body." But the whole gist of my argument was to show that whatever may be the extent to which some constitutional condition influences the production of cancer, to the same extent we may conclude that the constitution influences or determines the growth of the most innocent tumours. Herein is found the wide divergence of opinion which exists between the constitutionists and the localists.

In the face of the fact, which I fully admit, as fully as Sir James Paget, that cancer is frequently, I would almost say generally, hereditary, I cannot deny that the tendency to the disease *may* be present before the actual tissue change which constitutes the disease exists. In so far it is constitutional, but I maintain that the same applies to a fatty tumour, or a wart, or a grey hair.

Very recently a patient came to me who had a cancer. Her mother had died of cancer, but she had also a number of sebaceous tumours in the scalp; these she inherited from the father. She had, moreover, a host of these warty and other outgrowths which we so often find in persons who have tendencies to cancerous and other tumours. Many of these had been present as far back as she could remember, while numbers had come out since the cancer appeared. But none of them were cancerous, nor, indeed, do they ever become so. Why attach a different significance to these different states? Two of them were inherited. The third showed a strong general tendency to irregular outgrowth. Mr. Simon would make a

distinction between monstrosities and zymotic diseases. But he admits that no line can be drawn between them; nor does his view that the zymotic diseases exercise a spermatic or impregnative influence on the part with which they come in contact lead to the necessary conclusion that the parent tumour was the offspring of some special and peculiar constitutional disease. The most that could be said is that the disease having been developed becomes capable of impregnating other tissues so as to induce a similar growth amongst their elements. I confess that I am not as yet prepared to receive the spermatic hypothesis, and mainly for this reason. The Society heard the statement by Dr. Creighton of the observations which led him to the belief that secondary cancerous and other tumours take place not by the growth of germs from the original tumours, but by induced changes in the cells of the part secondarily affected. But he fully admitted the fact that the secondary growths always represent the primary in structure. Dr. Moxon quaintly but forcibly puts it that he has often seen rectum cancer in the liver. This fact, for such I have no doubt it is, shows that there is something in operation different from a spermatic influence. The tissue which is the seat of the primary cancer impresses its form on that cancer; if another tissue becomes impregnated by the disease, we should expect that it would in like manner impress *its* form on the secondary growth, or that, at least, the resultant would be a cross between the two tissues. But no; a secondary liver growth is enchondroma, or myxoma, or epithelioma, according to the nature of the primary disease; and not only so, but it represents the textural arrangement of the primary growth. It has no characters of liver arrangement, while it may have those of intestinal follicle or whatever the primary texture may have exhibited. That the visible changes in this secondary deposit in the liver tissue may begin in the liver cell is probable, but this does not prove that the changes are not due to the actual presence of the minute almost invisible germs which are conveyed to it from the primary cancer. I should rather suppose, then, that there was an outgrowth of the original disease which, becoming arrested at some point fit for its development, grows and grows of itself. It is in this like parasitic growth. A parasite grows at the expense of the part in which it lies, and in some cases only in particular tissues. Even admitting a spermatic influence it proves nothing as to the existence of a peculiar cancerous element

in the system, unless it can be shown that no such influence exists in the case of skin grafting, or of the reproduction of warts.

The Society may feel indebted to me for having elicited the eloquent address of Sir James Paget. It says much for the strength of my own convictions that they remain unshaken. With regard to the hereditability of cancer we are quite at one, and if the specific nature of the disease were thereby proved, I must at once confess myself in error. Sir James Paget, however, himself admits that many of the simplest forms of disease and deformity are equally hereditary.

But he draws an argument in favour of the special constitutional nature of cancer from the fact that, when inherited, it does not reappear of necessity in the same region or the same tissue, as is the case with what Mr. Simon characterises as deformities. Thus, breast cancer in the mother may be reproduced as uterine cancer in one child or as lip cancer in another. I think Mr. Arnott gave a very satisfactory answer to this undoubted fact. In order, moreover, to prove that the offspring inherits a generally diffused tendency to the disease and not a local one merely, it should be shown that the cancer can spring up in any tissue or organ of the body, as is the ordinary course of things in secondary cancers. This cannot be done. And herein we see a difference between gout or syphilis or scrofula and cancer; for Sir James Paget has pointed out that if a person having a tendency to any of these conditions receives an injury, be it in what part of the body it may, its course will be modified by the constitutional affection.

We see little or nothing of this in cancer. True, a blow on the breast, or the irritation of the tongue by a tooth or of the lip by a pipe, may sometimes determine the development of a cancer. But the same person may sprain a joint, or have a fracture, or receive a severe wound, yet neither the presence of cancer elsewhere nor the inherited tendency to the disease will modify the results in the slightest degree. Mr. Howard Marsh alluded to the three cases published in Sir J. Paget's work, and more such could be collected. Considering, however, the frequency of local injury and the extreme rareness of cancer following on it even in cancerous subjects, I doubt whether much support is given to the constitutional doctrine. It is to be observed that in a large number of such cases the osseous system is the seat of the disease. Mr. Marsh says that you cannot conceive that a cancer was merely localised in the spot, or that the blow happened to come on the only spot in which there

was a tendency to cancer. Certainly not. I should suppose that any part of the osseous tissue of that subject might be liable to become the seat of cancerous disease under injury. We know that the myeloid tissue generally is very prone to be the seat of irregular and diseased action. Let us turn to another series of cases in which the same tendency to disease from local injury is present. Sir W. Jenner and Mr. Simon alluded to cases in which hypertrophy of skin followed the removal of tumour composed of hypertrophied tissue, and this took place in the cicatrix of the wound, and wherever the suture needles had been passed. No one would imagine that here there was any general constitutional condition. If the cases quoted by Mr. Marsh are to be taken as evidences of the general cancerous condition of the patient previous to the injury, what are we to say of such a case as the following, which is by no means rare? A girl has an adenoid tumour removed, the skin over which is perfectly healthy to all appearance. As the wound heals keloid growth is developed in it and in the seat of suture; remove this keloid and it returns. But you may cut other parts of the body and no keloid may spring up. Is keloid too a constitutional disease in Sir James Paget's sense? If the springing up and recurrence of this hypertrophy under irritation in a part previously healthy be not the result of constitutional vice, why should it be so in the cases of cancer of the myeloid tissue? Both may be equally mere peculiarities of local development. I may mention a case which will illustrate this point. A man was brought to the hospital with a compound fracture of the radius which had occurred four or five days previously. The whole arm was enormously swollen, and in a condition of what may be called putrescent cellulitis. There was putrid gas and serum distending the cellular tissue up to the middle of the arm. The general appearance of the man was, notwithstanding this, singularly healthy. His pulse was 84; he had a clean tongue, and ate and slept well. I contented myself with making incisions, expecting that amputation might soon be necessary. By and bye the carpal bones and the head of the radius became carious, many of the former were removed, the head of the ulna exfoliated. There was copious suppuration, at first foul, but afterwards becoming healthy. During all this time, a period of a couple of months he retained his health, eating, drinking, and sleeping well, with a good colour and slow pulse. I determined to

let nature have her course. All at once he was seized with peritonitis. I feared it was pyæmic peritonitis, and that I had carried the experiment too far. He died, and it was found that the peritonitis was due to a portion of the gut having got entangled in a band, the result of a peritonitis which he had told us he had previously suffered from. But in addition to this there was found in the pelvis and lower part of the abdomen a mass of colloid cancer, while the omentum and intestines were throughout studded with nodules of the disease of various sizes. Here was a man with a development of malignant disease in the abdomen, and with an extensive injury to a limb, followed by destruction of soft tissues and bone, yet remaining so well apparently in health, and with the local condition of the limb going on so satisfactorily, that I abstained from operation. Is this what we should expect supposing the man had been suffering from some general constitutional disease? Surely one would be more inclined to say, Here you have a disease growing in one spot in the first instance, and spreading from that spot, but not pervading the body at large or influencing its actions. Had the patient been suffering at the time from scrofula, or diabetes or syphilis, should he have had such remarkable health under severe injury?

I do not feel quite satisfied with the answer of Sir James Paget to my question, How is the greater frequency of cancer in the female than in the male to be accounted for? Dr. Crisp said that I was wrong in my conclusions. I may be wrong, but this much is certain, that of the 500 cases recorded by Sir James Paget 330 occurred in women, and no uterine case was recorded. Now, if we add the large number of uterine cases, which are certainly as frequent as breast cancers, the number will come pretty nearly to what I stated. I am ready to admit, on the other hand, that internal cancers may be more frequent in the male than in the female; but even then there would be a very great preponderance in favour of the female. Sir James Paget says that this is because the breast and uterine tissues are so exposed to change and early degeneracy. I quite admit the fact that they are so, and assume it so far as it goes as an argument in favour of the local origin of the disease. It shows this, if it shows anything, that a local condition favorable to altered and morbid growth determines the growth in that situation, and that women who possess organs specially favorable to this altered local condition are, therefore, more subject to the disease. Are we

to assume, then, that men are equally prone constitutionally to the disease, but that it appears less frequently because it has not fitting organs in which to develop itself? This, surely, is contrary to all we know of constitutional disease. If a person be gouty or scrofulous, the disease will find its local point of attack somewhere. But even in cases of breast cancer, how often we find that the opposite breast remains functionally active when the one has been for some time diseased. In many cases, indeed, the functional inactivity has existed for years before the disease shows itself. Women with many children often tell us that they have never been able to suckle with the diseased breast, and I believe that, if we could look deeply enough into it, we should find that in a large number of cases an abnormal state had long preceded the cancerous formation, just as *e.g.* the scales on the face or the thickened epithelium of the tongue may exist for many years before any malignancy shows itself. Were cancer a result of degeneration giving rise to morbid growth in a person of already cancerous disposition, we ought in such cases to have the disease much sooner developed. But though we frequently find the breast inactive in which cancer appears, how frequently do we find the disease occurring in an active breast. And even in the breast in which cancer exists, it is not in the whole organ that the development takes place, but only in one part; and we see many cases in which partial removal of the gland has been made, and the disease has returned, not in the remaining gland tissue, but in the skin or connective tissue around the seat of the original disease. Again, if the breast is the seat of disease merely because it is a retrogressive organ, why is it that we so seldom find cancer developing itself in the opposite breast when it occurs secondarily; for the remaining breast has been for a much longer period, years perhaps, in a state of retrogression. Surely we should find, if the retrogression of the breast tissue were very efficient in determining the seat of cancer, that the second breast would be as frequently the seat of cancer, or nearly so, as the first, and this especially where secondary growth is going on elsewhere, showing that the cancerous disposition, whatever it may be, is still present and active. But we rarely, very rarely, find that to be the case. Still more rarely do we find the uterus to be the seat of secondary cancer, or the breast to be the seat of secondary cancer when the uterus has been primarily diseased. And yet nothing is more common than to find uterine irritation associated with breast cancer. This is a strong fact, which has not been

explained in the discussion. My explanation of it is this—that we may have from the first a certain part or tissue of the body which has the same tendency to abnormal growth at its due season as a hair has to turn grey or the tooth to decay in due season, a season fixed in the individual at the earliest period of life, and very often inherited from the parent. This period may be hastened by undue irritation, it may be delayed by circumstances tending to preserve the tissue in a healthy state. We need not look to the blood or to any general condition to account for this. It is not the blood or any general tissue which causes the hair to fall or turn grey in one place in one person, in another place in another person. Such, then, I take it, is the course in inherited cancer or inherited fatty tumour. I would not deny that sometimes the disease may be the result of protracted irritation in tissue predisposed to take on irregular action. It seems to me that the mode in which secondary cancer occurs is opposed to the views of Sir W. Jenner, that there exists a tendency to the disease distributed over the body. You do not find it where you would expect to find it, but you do find it spread here and there, at long distances often, from its original seat, if it has advanced beyond the neighbouring glands ; in the lung, perhaps, or the liver, or the leg of the opposite side, or in any situations you please, except in those which are the common seats of primary cancer, the breast or uterus for example, or the testicle or the opposite side of the lip or of the tongue.

Sir W. Jenner, if I understand him rightly, doubts as to the wandering of cancer elements from a growing tumour. I thought that this was a fact established by repeated observation, not in cancer only, but in other tumours, in enchondroma for example. The fact that we find the mobility of elements directly proportionate to the diffusion of disease would alone point to this. The most diffusible form of cancer that we know of is melanotic sarcoma, where we get often hundreds of points of disease in every part of the body rapidly supervening on a primary growth. M. Nepvieu, an excellent observer, has discovered that in this form of disease the blood in the early stage is unaffected, but if the tumour be interfered with inefficiently the blood-corpuscles and the serum of the blood show decided evidences of the presence of the pigment matter, and an irruption of the disease universally at once manifests itself. I should say that if pathological observation has taught us anything it is that secondary cancer is the result in

many, indeed in almost every case of transplantation. In the case of melanosis, for example, there is nothing remarkable in the blood while the primary tumour is growing, but irritate or disturb it and then the blood gets loaded with diseased particles, which are conveyed all over the body. In tumours which have not that direct connection with the vascular system which clearly is present in melanosis, the elements take more frequently another course, as the lymphatics or connective-tissue spaces. But in cases such as those related by Sir James Paget, of tumour penetrating the coats of a vein, there, no doubt, transference of diseased elements takes place by means of the blood. The cases of implantation by direct contact are, I think, very striking. Sir W. Jenner mentions one where cancer grew along the track of a needle introduced into a cancerous peritoneum. In another case the same thing was seen in the course of a trocar puncture. Mr. Shaw has related a case in which a cancer sprang up in the skin of the abdomen, which was constantly exposed to the contact of a very pendulous cancerous breast. In other instances the pleura of one side has become studded with minute cancer nodules following the growth of a mediastinal tumour into the cavity. Surely all these facts render it much more probable that secondary cancer and other tumours grow by dissemination and grafting rather than by new original formation. The more so inasmuch as we cannot produce cancer by local irritation in those very persons in whom new cancer growth is elsewhere going on. A wound may heal or a fracture unite quite well in a patient in whom secondary growth is going on.

Those who hold that cancer is a local manifestation of a general condition should be able to indicate at least, if they cannot demonstrate, where a line should be drawn between simple and malignant growths. All alike may be inherited, and in so far constitutional, but, beyond that, when does a new factor come into play? The more disease is studied the more are we disposed to simplify our views of its causation. If we trace tumours up we find in the first place that the deviations from natural condition are so vague that it is not possible to define where tumour first appears. The simplest of them resemble natural structures. By and by they present some irregularity of structure, but still are content to grow without interference with other structures unless by mere pressure. Then they may attack neighbouring parts, and draw them into their own structure, but only extend by continuity. Further on they may be

found infecting neighbouring glands, but tending little, if at all, to pass beyond them. Then may come the more malignant forms, which in greater or less degree affect distant parts. Where does the constitutional element, as apart from a pre-existing tendency to local disease, come into operation? It is not evidenced by mere recurrence, or by dissemination, or by destructiveness. These may be found in other than cancerous diseases, and may be absent in cancer.

I maintain that during a long period in the life of a cancer we have no indication of such general derangement as we do find in what may be called general or constitutional or blood diseases. I may again observe that I never attributed to cancer that "all-pervading condition" which is the essential element of general or blood disease. On the contrary, while I agreed that in one sense cancer was constitutional, I was desirous of showing that it was not an outcome of a depraved or other special state of the system at large, which must declare itself in one place if it did not in another. That, in fact, there was no more an all-pervading influence in cancer than there was in the production of fatty or other simple tumours.

And here I think that Sir W. Jenner has placed the notion of a blood or general disease in its true light. He says, "It was not at all uncommon to see at the Children's Hospital mothers who brought children so out of health that they said 'He never pricks or scratches himself but the place festers.'" This is just what we find in so-called blood diseases. The form of local affection will vary with the nature of the disease, but the sequence of events will be the same. Whether we take the exanthemata, or gout, or scrofula, or diabetes, or syphilis, we find a recognisable state of general derangement before the local symptoms appear. The gouty subject too well knows from his general feeling that he is in for an attack. The diabetic patient will have given marked evidences of general derangement before carbuncle or gangrene occur. The surgeon will recognise the scrofulous disposition before the local disease manifests itself. In syphilis how common it is to find that the offspring is ill-developed or abortive even when there is no sign of the disease in the parent. The question was asked by Mr. Hutchinson, what effect has cancer in the parent on the fœtal development? So far as I have seen, none whatever. I have known many instances of pregnancy in women suffering from

cancer, and they have gone the full term and produced healthy offspring. In one case I removed by Cæsarian section from a mother suffering from uterine cancer a fœtus before the full term, which was healthily developed and throve well.

It has been said that persons may have blood disease, but that all the reparative actions may go on as if nothing were the matter, and gout and scrofula were instanced. But there is this to be noted, that, while gout or scrofula or syphilis are active and giving rise to local manifestations, they *do* interfere with the course of injury or operation. In the intervals of activity there may be nothing, perhaps, to notice. But we find that while cancer is active and growing there is no interference with the bodily functions or with repair of injury. The subjects of the disease may be entirely unconscious of any loss of health, nay, they frequently consider themselves in better health than usual, and this is a great reason why cancer is so often disregarded in its early stages by them.

Sir J. Paget denies that cancer is a disease of otherwise healthy persons, but how is that to be judged of? Surely, if I find a person with a healthy look, active, with a good appetite, and enjoying life thoroughly, while there is not a trace of any diseased action beyond that of a lump somewhere, I am entitled to say that such a one is in good general health. But do we find those in whom gouty or scrofulous or syphilitic changes are going on thus free from all general disturbance? In the intervals of attacks, I admit, there may be comparative health, but even then what slight causes will reproduce a general disturbance.

With regard to the immunity from cancer after removal, Sir James Paget says that it does not occur in more than one case out of five hundred. This I very much question. Sir James, in making the statement, had, no doubt, had his attention fixed on breast cancer especially. But if we look to cancers of a less mobile structure, and which are detected almost as soon as formed, we may find many instances of removal without return. Indeed, if we freely remove an epithelioma before any infection of the glands has taken place, and a good healthy cicatrix is formed, we may reasonably hope for permanent benefit. But of breast or uterine cancer in its early stages we know nothing, unless may-be in some of those rapid cases which are certain, from their active growth and highly mobile elements, at once to contaminate neighbouring glands and neighbouring or even distant tissues. The slower growths are rarely

heeded until they have acquired some size; and who can say how long it will take for a wandering cell, or a host of them, to detach themselves from its surface? Those who believe in the influence of the mobility of elements on the reproduction of cancer would consider it almost a matter of certainty that in a scirrhus of many months' or many weeks' duration some of its elements must have freed themselves from their parent, and have passed to a greater or less extent into the surrounding tissues. They believe, consequently, that the most satisfactory cases are, *cæteris paribus*, those in which the most extensive removal has been resorted to. Hence the difference between cancer and such a case as that related by Sir J. Paget, in which he removed a recurrent tumour in the thigh eighteen times. The part remained the seat of disease, but its structure was one the elements of which were little mobile, while in a cancer each recurrence would be the focus of new growth by dissemination, and from each new centre fresh germs would pass to neighbouring or to more distant tissues. The chances of limitation in cancer are small indeed as compared with those which exist in recurrent fibroma. Does it not appear strange that there should be an obstinate tendency to recurrence within certain limits without the agency of any general or constitutional influence, while if that limit be exceeded the aid of this agency must become necessary?

Again, in all these blood diseases the local manifestations are those of impairment of tissue or mere exudation of unorganized material, while organization is essential to the idea of tumour. Nor can I see that there is any analogy between diseased local action, the result of general disease, and new growth. If in diabetes we have carbuncle or gangrene of a toe, we know that the whole body has been impaired long before some special part of it begins to fall into more intense disorganization, and so with other general diseases. The local affection may at once show what is the real nature of the general disease, but then on inquiry we find that there have been, at one time or another, antecedent constitutional symptoms. Nor in these protracted forms of general disease can we at all tell what characters the next external manifestation will assume. They may be those of unorganized exudations, or unhealthy ulcerations or eruptions, or inflammations, or some other form of malnutrition. But in cancer we know that the only local secondary consequences will be fresh deposits of cancer; and so in enchondroma, or fibroma,

or whatever the tumour may be, we shall have a repetition of it in the secondary growths until the system becomes contaminated.

In cancer, moreover, we know that the original form under which it appears will be repeated. The secondary forms of epithelioma will be epithelioma; of scirrhus, scirrhus, &c. And this though the tissues secondarily affected are the same. A lymphatic gland tainted by a scirrhus will reproduce scirrhus, the same gland affected by epithelioma will become epitheliomatous. I do not suppose that any constitutionist would think that there are different forms of general cancer disposition. Even the very tenacity with which cancer keeps its hold on the body is opposed to what is seen in general disease. So-called constitutional diseases very commonly seem to wear themselves out. Syphilis and scrofula, for example, after years of activity, will often exhaust themselves and die out. This is an extremely rare event even in primary cancer, but almost an unknown one when the disease has become extended to distant parts.

Sir James Paget indicated some points of agreement between the course of cancer and that of the local products of recognised constitutional diseases. Admitting all the facts he has stated, still, as I have endeavoured to show, there are side by side with them many points of divergence so marked as greatly to lessen the force of his argument. But I can see no analogy, no resemblance of any kind, between new growth, whether as innocent as a lipoma or as malignant as cancer, and the products of true general or blood disease in respect of their genesis and destination. From the first a tumour is a living, self-dependent formation, capable of continual growth by virtue of its own power of using the nutritive matter supplied to it. Nothing like this is seen in any of the blood diseases. The nearest approach is in tubercle, but that must be regarded as a secondary inflammatory product, nor is there any reason for thinking that tubercle once formed is capable of independent growth.

Cancer and other growths may be regarded as the results of a new direction of organizing force, while the blood diseases or constitutional diseases all tend to impairment or derangement of the organs already formed, or at most to the effusion of unorganized products. I do not see any gradation from the effects of disease such as syphilis or scrofula into the simple or malignant forms of new growth. Syphilis or scrofula may be the constitutional causes of low inflammations and of inflammatory effusions, which may, as the

diseased action subsides, become organized into natural tissue, but this is very different to a new organization springing up without warning and without perceptible irritation either general or local. To those who can see no difference between my views on this subject and those advanced by Sir James Paget I must express my regret that I failed to convey my meaning, or I may suggest that they have erred in supposing that because there may be an inherited tendency to local disease there must therefore be a general dyscrasia of which the local disease is a mode of expression. Those who maintain that cancer, because undoubtedly in many cases inherited, is therefore a general disease, a vice of the whole system, should show wherein lies the difference *quoad* inheritance between cancer and fatty tumour. That the cancer of the parent is reproduced in a different part in the offspring proves no more in favour of a general affection than does the occurrence of fatty tumour in the leg in a person whose parent had one in the neck. A local tendency to irregular new formation in some tissue is inherited, it may be in one or another in the case of cancer, because cancer is not the repetition of any normal tissue. In the case of fatty tumour, as it is a repetition of a normal tissue, it occurs somewhere in that tissue.

Those who maintain that there is a something superadded to the local tendency, inherited or otherwise, should show where this addition begins, and what are the first signs of it. I cannot but think that the fact which has been alluded to, that persons suffering from cancer are so subject, as they often are, to other abnormal growths which do not necessarily, though they may possibly, become cancerous, is in favour of the view that there is in the development of the body a tendency to local mal-development. These warts and mole-like growths would, it might be reasonably supposed, be readily seized on by the cancer element pervading the system, and only requiring a fitting structure in which to develop itself. It is not so, however, nor can it be said that the whole energy of the general disease is exhausting itself in the one original tumour, for abundance of secondary cancer growth may be springing up, while these excrescences remain harmless. So, too, I think, the fact sometimes observed of an adenoid tumour, or a systic sarcoma, growing in one breast when the other is already the seat of spreading cancer, without any tendency to their invasion by the cancer, points to the same conclusion, that cancer tumour is not an expression of a general

dyscrasia or of a blood disease, but that it is local modification of growth in persons in whom we may at times find more or less tendency to other but innocent local irregularities.

This view admits of the possibility of more than one part of the body being the locality of primary cancer. Both breasts, *e.g.*, might be the seats of it; the wonder, indeed, is that there is so very seldom evidence of more than one such seat. This is the more remarkable as we frequently meet with multiple simple tumours, as lipoma, neuroma, dermic outgrowth, and such like. We surely should not find the disease limited, in the first instance at least, and often entirely, to one spot, if there were some cancerous influence pervading the system. This is not the case, or is very rarely the case, in what are called constitutional diseases, in syphilis or scrofula or gout, while in tumours, especially in the so-called heterologous tumours, it is the rule to which the exceptions are very few. The determination of gout to one toe is no exception to the general rule regarding constitutional diseases, for the whole system is manifestly in a gouty state, and the slightest causes may determine the local excess in any situation. In scrofula it may occur, but it is a rare event.

Many of these may be but trifling points in themselves, and so may others, taken singly. But it does seem to me that, taken altogether, the arguments in favour of the view that cancer is not in the first instance a disease of the blood or of the system at large have not been shaken by its opponents. They point to the conclusion that the same constitutional element which gives rise to any local peculiarity may be active in the production of cancer, or that perhaps the same force which determines the original growth of muscle, or bone, or nerve, out of what appears to be a homogeneous mass of matter may be the determining force in the production of cancer.

It only remains to me now to return my thanks to the Society for the reception it has given to the paper with which I had the honour of opening this important discussion. Many points have received full and searching investigation; some demand yet more. One thing is certain—that the views which have been so ably expressed by the various speakers cannot but lead to deeper reflection on and clearer insight into the nature of cancer and its relation to other growths. No doubt "there is a great deal to be said on both sides," and we cannot be sure of the correctness of our conclusions on any point of pathology, ignorant as we are as yet of the laws

of normal development. But the result of such a discussion on the pathology of cancer must be to bring us nearer to a knowledge of the truth, and every advance we make in that direction will, we may hope, sooner or later produce its effect on our treatment of the disease. It will lead us to reflect on the direction which our search after remedies must take; it may leave us still aground on that most unsatisfactory position, that our only hope is in early and, so far as possible, complete removal.

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